City of Louisville
COLORADO • SINCE 1878

Planning Commission

Agenda

January 12, 2012
City Hall, Council Chambers
749 Main Street
6:30 PM

Public Comment will be limited to three (3) minutes per speaker.

I. Call to Order

II. Introduction and Welcome of New and Reappointed Planning Commission Members.

- New Members:
  - Jeff Moline
  - Cary Tengler
- Reappointments:
  - Steve Brauneis
  - Scott Russell
  - Ann O'Connell

III. Roll Call

IV. Approval of Agenda

V. Public Comments on Items Not on the Agenda

VI. Regular Business – Public Hearing Items

- **Resolution No. 29, Series 2011, Steel Ranch South (Takoda, Planning Area 4)** *11 MB*, a preliminary subdivision plat and preliminary planned unit development for an approximate 17 acre parcel of the Takoda Subdivision with the intent to develop the property with a maximum of 306 residential units (220 – 240 apartments and 60 – 70 townhomes or duplexes). (Continued from the December 8, 2011 meeting)
  - Applicant, Owner and Representative: RMCS, LLC (David Waldner)
  - Case Manager: Sean McCartney, Principal Planner
- **Resolution No. 30, Series 2011, Parks, Recreation, Open Space & Trails (P.R.O.S.T) Master Plan** *16 MB* The PROST Master Plan is a comprehensive document to guide the City of Louisville Parks and Recreation Department in the maintenance, improvement, development and prioritization of resources related to parks, recreation, open space,

trails, facilities and programming. (Continued from the December 8, 2011 meeting)

- Applicant: City of Louisville
- Representative: Kathy Kron, Parks and Recreation Department, Project Manager
- Case Manager: Sean McCartney, Principal Planner

➤ **Resolution No. 01, Series 2012, Loftus Development, Inc. (Jim Loftus – Safeway Redevelopment)** *9 MB*; a request for a preliminary planned unit development (PUD) plan and a special review use (SRU) to allow for the redevelopment of the former Safeway site into a mixed use community consisting of two (2) retail buildings around a pedestrian plaza and three (3) residential buildings on the remainder of the site. Case No. 11-024-PP/UR.

- Applicant: Loftus Development, Inc. (Jim Loftus)
- Owner: Safeway Stores 45, Inc.
- Representative: The Mulhern Group, LTD (Andy Baldyga)
- Case Manager: Gavin McMillan, Planner III

VII. Action Items: beginning of 2012:

➤ **Resolution No. 02, Series 2012** – A resolution establishing the locations for the posting of public notices for 2012 meetings of the City of Louisville Planning Commission. (City Hall, City Library, Louisville Recreation/Senior Center, Police and Courts Building and the City's web site)

➤ **Election of Officers**

VIII. Items Scheduled for the Overflow Meeting: January 26, 2012:

➤ **Resolution No. 03, Series 2012,** 1550 and 1562 Madison Court – Minor Subdivision, Lot line adjustment – a minor subdivision request to adjust the property line between two properties located at 1550 and 1562 Madison Court. 1550 Madison Court will be 15,031 square feet and 16562 Madison Court will be 11,711 square feet in area. Case No. 11-043-FP.

- Applicant, Owner and Representative: Gary Mancuso
- Case Manager: Troy Russ, Director of Planning and Building Safety

➤ **Resolution No. 04, Series 2012,** Parbois Place Subdivision – Amendment – Whittier – The application is for two requests:

- A minor subdivision to create two (2) lots of record where there is currently one (1) lot at 533 County Road. Lot 7 will be 8,496 SF and Lot will be 6,126 SF.
- An amendment to the previously approved (2009) Parbois Place Subdivision and PUD to add two (2) lots, Lots 7 and 8. The inclusion of the two lots would permit Lot 8 to benefit from the PUD variations of a standard setback. No changes to the previously approved Parbois Place Subdivision and PUD are proposed. Case No. 11-009-FS/FP.

- Applicant and owner: Carmel Whittier
- Representative: Richard Lopez
- Case Manager: Gavin McMillan, Planner III

IX. Planning Commission Comments

X. Staff Comments

- 2012 Development Review Schedule and Fees
- 2012 Planning Commission Meeting Dates and Locations
- Open Government & Ethics Pamphlet – 2012 edition
- 2012 Planning Commission Reference Notebook – will be available at the January 12, 2012 meeting

XI. Items Tentatively Scheduled for Next Regular Meeting: February 9, 2012

- **Resolution No. 02, Series 2012,** Loftus Development, Inc. (Jim Loftus – Safeway Redevelopment); a request for a preliminary planned unit development (PUD) plan and a special review use (SRU) to allow for the redevelopment of the former Safeway site into a mixed use community consisting of two (2) retail buildings around a pedestrian plaza and three (3) residential buildings on the remainder of the site. Case No. 11-024-PP/UR. (continued from the January 12, 2012 meeting)
  - Applicant: Loftus Development, Inc. (Jim Loftus)
  - Owner: Safeway Stores 45, Inc.
  - Representative: The Mulhern Group, LTD (Andy Baldyga)
  - Case Manager: Gavin McMillan, Planner III

XII. Adjourn

City of Louisville
COLORADO • SINCE 1882

Planning Commission
Staff Report
December 8, 2011

ITEM:	Case #11-038-PS/PP, Steel Ranch South
PLANNER:	Sean McCartney, Principal Planner Troy Russ, Director of Planning and Building Safety
APPLICANT:	RMCS, LLC. 950 Spruce Street, #2A Louisville, CO, 80027
OWNER:	Same as above
REPRESENTATIVE:	Justin McClure
EXISTING ZONING:	City of Louisville Planned Community Zoned District – Commercial and Residential (PCZD-C/R)
LOCATION:	The subject parcel is located north of South Boulder Road, east of the BNSF rail line, and west of the Christopher Village Apartments.
LEGAL DESCRIPTION:	Lot 1, Block 10 (Takoda Subdivision) Lot 3A (Davidson Highline Subdivision)
TOTAL SITE AREA:	17.32 acres
REQUEST:	A request of a preliminary subdivision plat and preliminary planned unit development (PUD) for an approximate 17 acre parcel of the Takoda Subdivision. The intent of the request is to develop the property with a maximum of 306 residential units with a variety of housing products (220-240 apartments and 60-70 townhomes or duplexes), consistent with the parcel's General Development Plan

DECEMBER 12, 2011 PLANNING COMMISSION MEETING

At the December 8, 2011 Planning Commission meeting, Planning Commission requested a continuation of the Steel Ranch South Preliminary Plat and PUD for the following reasons:

1. Roadway Design Options - The on-street bike lanes were believed to be unsafe and not consistent with City other off street bike trails which run throughout the City. They requested the applicant provide alternative designs to show how an off street bike trail could be designed while maintaining the same right of way width.
2. Public Land Dedication - The Planning Commission wanted more solidification whether the Parks and Recreation Department was to accept Tract O (from Takoda Subdivision) as part of the Public Land Dedication.
3. Christopher Village Apartments - The Planning Commission was concerned about eastbound traffic making left turns into the Christopher Village Apartments so as to access the southern-most egress into Steel Ranch South. They requested more information form staff as to the function of this egress.

Staff acknowledges the concerns of Planning Commission and has held subsequent meetings with the applicant. The following has been determined through these meetings:

1. Roadway Design Options – staff has attached a copy of four (4) alternative roadway design options which the applicant has created in response to the Planning Commission concerns. In reviewing the options staff has the following comments:
    a. Option #1 – The flow line has adequate width however the travel lanes are too wide. The inclusion of the trail on the west side requires the inclusion of a retaining wall which is to be placed within the Burlington Northern Santa Fe (BNSF) right of way. Staff anticipates there will be push back from BNSF for the placement of a retaining wall in the BNSF right of way. Plus, because of the future development of Fastracks, it is unknown what the final grade of the eastern side of the rail line will actually be. A 6.5 foot tree lawn is not adequate for the placement of trees.
    b. Option #2 – The 32 foot flow line is similar to the Grove Subdivision, with the exception of on street parking. The City anticipates using the 5 foot attached bike lanes for snow removal in winter. The 17 foot tree lawn to the west is more than adequate width for the placement of screening and sound buffering landscaping from the BNSF, such as trees and shrubs.
    c. Option #3 – The 26 foot flow line appears too narrow for Fire District to safely access and does not provide any additional right of way for snow storage. Staff acknowledges the option includes a detached trail on the west, however the proposed lawn on the east side is too narrow for sound buffering landscaping. The 9.9 foot tree lawn on the west side does provide adequate area for trees and shrubbery.

d. Option #4 – Flow line width is similar to Option #3 and therefore staff acknowledges the flow line width is again too narrow for fire access and snow storage. In addition, the 10' FL-FL trail/separate lane will be difficult to repair if made of different materials (i.e. concrete and asphalt).

Based on overall flow line width, travel lane width, snow storage possibilities and adequate sound buffering/screening landscaping lawn, staff acknowledges Option #2 would be the preferred street design option. Also, the Parks and Recreation Department, as well as the Open Space Advisory Board (OSAB), both agree Option #2 is the preferred option for north/south trail connectivity. Staff will continue to work with the applicant to refine the turning radii Steel Street by the time of final submittal.

2. Public Land Dedication – The Parks and Recreation Department acknowledges the applicant has dedicated public land needed to complete the final link in an east/west regional trail system. Even though the land has some existing encumbrances, such as the Goodhue Ditch and utility easements, the City is willing to work with these encumbrances to ensure of the regional connectivity of the trail system. One of the dedicatory elements is Tract O, which is a tract from a previously platted subdivision.

   The Parks and Recreation Department will continue to work with the applicant to finalize the public land dedication prior to Final Plat and PUD submittal.

3. Christopher Village Apartments – The Planning and Building Safety Department requires a traffic analysis at the time of submittal of a General Development Plan (GDP). The Traffic Report did not highlight any potential conflicts between eastbound traffic on South Boulder Road and the Christopher Village Apartments.

   Staff acknowledges the concerns of the public regarding potential conflicts of eastbound South Boulder Road Steel Ranch South residents turning left into Christopher Village Apartments, however staff also acknowledges the expertise of the Traffic Engineer who does not anticipate any conflicts.

Staff appreciates Planning Commission's concerns regarding the above issues, however these are standard issues which are typically addressed between preliminary and final review. Staff recommends the Planning Commission forward the Steel Ranch South Preliminary Plat and PUD to City Council with the understanding staff will continue to work with the applicant to address the above concerns.

BACKGROUND:
The applicant/owner, RMCS, LLC has submitted a Preliminary Plat and Planned Unit Development (PUD) plan to allow for the development of approximately 306 proposed

residential units on 17.32 acres. The new development is named "Steel Ranch South PUD", formerly known as "Takoda PUD Planning Area #4".

The original Takoda Village GDP was approved on June 3, 2008 by Ordinance No. 1536, Series 2008; the Final Subdivision Plat and Final PUD for Takoda were approved by Resolution No. 24, Series 2008. A 2010 amendment to the GDP allows for a density transfer of 20 units from Planning Areas 2 and 3 to Planning Area 4. This density shift results in a total of 198 units permitted in Planning Area #4.

As part of a GDP amendment in 2011, a 6 acre parcel was added to Planning Area #4. This parcel was originally annexed into the City of Louisville in 1982 and was zoned an Agricultural (A) District on the northern portion of the property and an Office (O) District on the southern portion of the property. The GDP amendment to Planning Area #4 rezoned the property to Planned Community Zone District – Commercial/Residential (PCZD-C/R), including an additional 108 residential units.

This property is located within Opportunity Area #1 of the Framework Plan of the 2009 Comprehensive Plan. The Framework Plan illustrates this property as Office district along South Boulder Road and High-Density Neighborhood (15 – 30 du/acre) to the northern rear of the parcel.

REQUEST:
The applicant is requesting a preliminary Plat and PUD to allow for the placement of approximately 306 residential units within the 17 acre parcel. The development is

separated into two independent planning areas: Planning Area 4A and Planning Area 4B.

Planning Area 4A – this area consists of approximately 66 single family residential units, both attached and detached. The main circulation throughout the development is by local roads, but each unit will be accessed by private alleys.

Planning Area 4B – this area consists of approximately 240 multi-family units within 10 multiplex apartment buildings clustered around a common space. Circulation throughout the site is provided by 22' wide private drive aisles.

Preliminary Subdivision Plat Amendment

Public Street Standards

Proposed street widths and right-of-way (ROW) standards are narrower than current City standards:

- The ROW width for the proposed public local streets (Steel Street and Luke Street) is requested to be 46.5' and the ROW width for the private local street (Kalel Street) will be 50'.
- There will be a parkway (tree lawn) established for each alternative roadway design within the development.
- The proposed alleys are to be maintained privately.

Multi-Modal Street Design

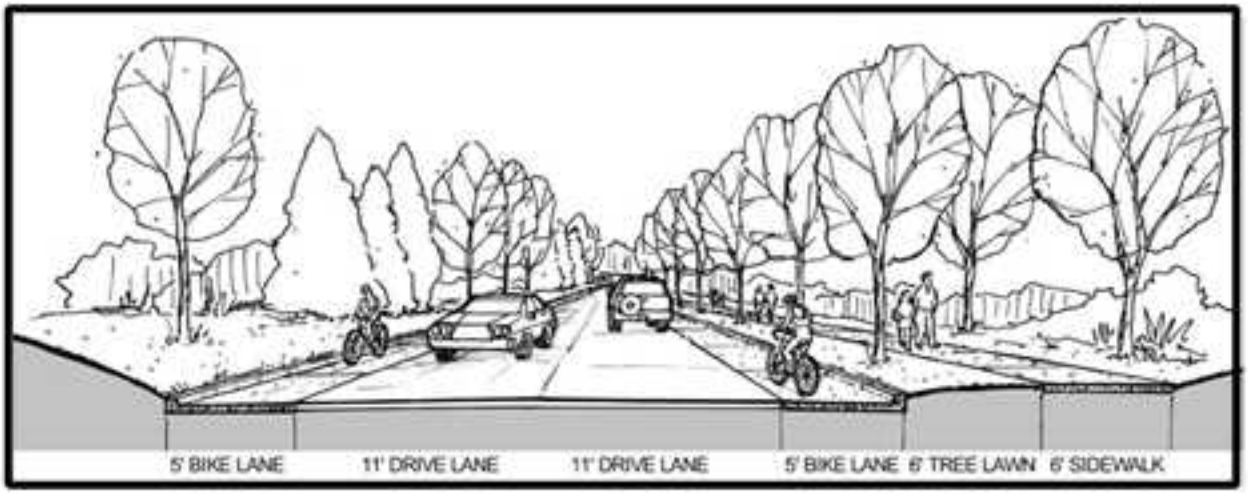
Steel Street is designed with 46.5' of ROW and is primarily designed to promote a "Livable" street and ROW. The idea of a livable street is to accommodate all forms of

transportation, vehicles, transit, bicycles, and pedestrians of all ages and abilities within a contextual street design that is compatible with its surrounding land uses. Specific design features of this street type are not currently within the City's street design regulations.

The street cross sections on page 8 of 18 show how the livable ROW will be designed for multi-modal purposes. Unique and challenging aspects of this street include:

- 11' travel lanes
- 5' Extruded gutter pan bike lanes
- 6' Sidewalk
- Parkway (Tree Lawn)
- Substandard curve radii (below 150-feet (25 mph))

An objective to this living street is to calm (slow) traffic speeds to enable a shared street environment. In principal, the City supports the intent of the street's design. However, in its current layout, the street creates challenging ongoing safety and maintenance concerns for the City.



The City does not accept proposed streets which do not conform to City Design and Construction Standards. In this case the right of way width is under 50'; the flow line dimension (curb face to curb face) varies from 24' to 40' and not consistent with the local street standard of 36'; walks are provided on only one side of the street; and the centerline curve radius at Luke Street and Steel Street intersection is under 150'. Therefore, the City will not accept proposed ROW and street widths for Steel Street and Luke Street as part of this preliminary submittal.

The City is willing to continue to work with the applicant to determine an acceptable alternative ROW and street design dimensions prior to final submittal.

As proposed, the turning radius the intersection of Steel Street to Luke Street, along with ROW dimensions do not meet City Standards. The applicant and Public Works Department have determined a roundabout, or similar design, could be considered at

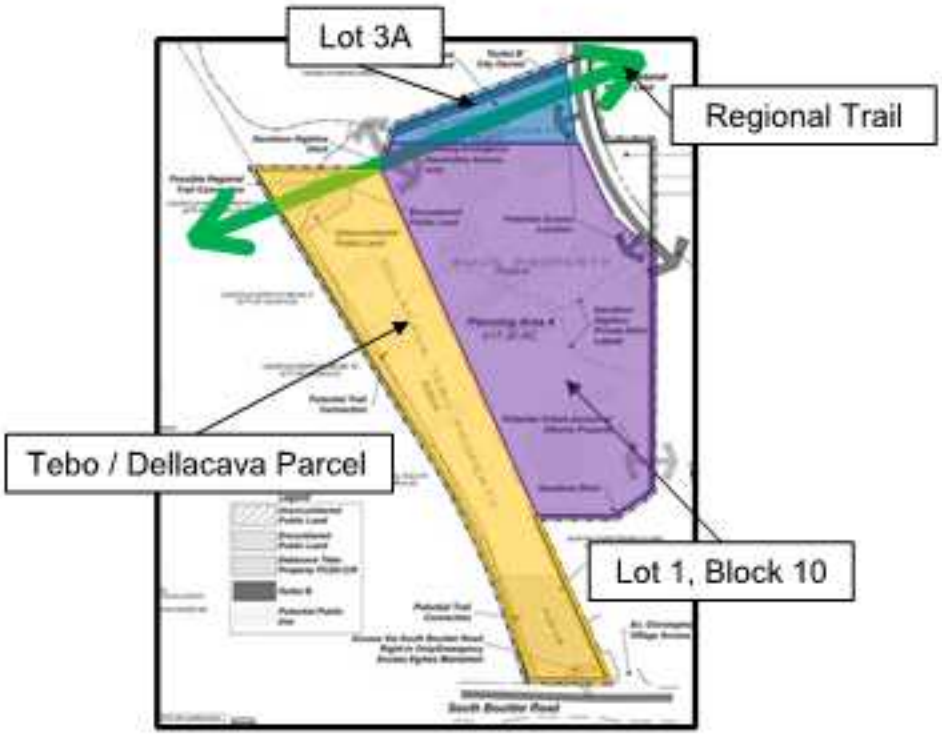
this location. City design standards do not address roundabouts; however, City staff is familiar with national best practices and are familiar their design requirements.

In concept staff supports the design of the roundabout, or similar solutions, along with a possibility of narrow street cross sections within residential areas for traffic calming purposes. Staff is willing to consider accepting nonstandard alternative designs to those proposed for Steel Street and Luke Street as public ROWs in the Final Plat and PUD submittal after further design specifics are vetted with the applicant and the Public Works Department.

The proposed apartment complex in Planning Area 4B has a separate roadway circulation, providing Fire Safety approved aisle width (20' minimum) and parking alongside the aisles. The interior circulation for the apartment complex has an ingress/egress onto Hecla Drive.

Public Land Dedication

The proposed preliminary Plat and PUD includes portions of previously platted areas (Lot 1, Block 10 of the Takoda Subdivision; and Lot 3A of the Davidson Highline Subdivision, replat) and 5.93 acres of previously unplatted area (previously known as Tebo / Dellacava Parcel).



Lot 3A and Lot 1, Block 10 have had public land dedicated by previous plats, therefore the only area subject to public land dedication is the 5.93 acres of the Tebo/Dellacava Parcel. The required public land dedication is .65 acres (15% of the net acreage).

According to the submittal, the applicant has dedicated a total of 1.4 acres towards public land dedication, as detailed below:

- Unencumbered public land dedication: .39 acres
- Encumbered public land dedication: .76 acres
- Outlot B: .2 acres
- Tract O (Takoda Subdivision): .25 acres

Tract O, which is a tract from the previously approved Takoda Subdivision, was originally dedicated as an emergency access and private open space for trail connection. In this submittal the applicant is dedicating the land to the City for trail connection to the future regional trail system. The Parks and Recreation Department will continue to work with the applicant on the dedication of Tract O, from the Takoda Subdivision, as public land dedication.

The City requires the public land dedication be free of encumbrances. However, because the land being dedicated will be used to complete a key link in the City's open space and regional trail connection, and the encumbrances are the existing Davidson Highline Ditch, existing Public Service easement and an existing 40' utility easement, the Parks and Recreation Department is recommending Planning Commission recommend and City Council accept the encumbered land as the last remaining piece of a larger open space area and key recreational trail connection.

Davidson Highline Canal / Goodhue Ditch
As shown in the preliminary Plat and PUD, the Davidson Highline Canal, located within Outlot 3, will be retained within a 50' wide utility easement and treated as a design feature. The applicant has been working with both the Davidson Highline and Goodhue Ditch companies to determine whether or not piping of the ditch is preferred. Staff recommends the applicant continue to work with the ditch companies to insure all of their interests are met by Final Plat and PUD.

Burlington Northern/Santa Fe
The development is located adjacent to the Burlington Northern/Santa Fe rail line. The applicant is taking steps necessary to provide noise mitigation for their development. RMCS has generated a site plan which utilizes Steel Street right of way as buffer space for the residential product type. From the edge of the BNSF right of way, there is approximately 80 feet of separation between the nearest single family structures.

The applicant has also stated "multi-family units within 100 feet of the railroad right of way will incorporate noise mitigation via enhanced wall construction and window specification, including a minimum exterior wall Sound Transmission Coefficient of 55 facing the railroad right of way, with tight fitting triple pane windows, and solid core doors." The nearest multi-family structure is located within 70 of the rail right of way.

Preliminary PUD Development Plan

Land Use

As previously noted, the parcel is zoned PCZD-C/R. The commercial component of the zoning is to allow for potential office use closer to South Boulder Road. However, the current preliminary PUD does not include a commercial component of the design scheme. Therefore, this land use submittal focuses on residential uses.

As a general land use principle, future growth should promote a compact urban form, efficient use of resources, and enhance the quality of life for present and future residents of the City of Louisville.

According to Section 17.72.080 of the Louisville Municipal Code (LMC), the PCZD-R zone district allows for single-family detached, single-family attached, multi-family and accessory structures. Staff acknowledges the proposed land uses comply with the established zone district.

Bulk and Dimension Standards

The preliminary PUD is consistent with the General Development Plan in reflecting the distribution of housing products and the associated density by Planning Area. The preliminary PUD also contains preliminary height and bulk standards as well as typical character elevations of each of the proposed residential product types.

Because the development is divided by two planning areas, staff has provided a breakdown of how the Bulk and Dimension are handled in each planning area:

Planning Area 4A (single family attached and detached):

Minimum Lot Area:	SFA – 1,000 SF
Minimum Lot Width:	16'
Maximum Lot Coverage:	85%
Minimum Front Yard Setback (Principal Uses):	5' (all conditions)
Minimum Side Yard Setback (Principal Uses):	5' (all conditions)
Minimum Rear Yard Setback (Principal Uses):	4' (to alley)
Setback from collector street ROW:	parking: 15'; building: 10'
Setback from local street ROW:	parking: 5'; building: 5'
Setback from Parks and Open Space:	0'
Minimum building separation:	10'
Maximum Building height:	35'

All of the single family units are designed to be alley loaded with the front of the unit facing a private open space or "mews". This design was used in Planning Areas 2 and 3 of the Takoda (Steel Ranch) PUD.

Planning Area 4B (multi-family – apartments):

Minimum Lot Area:	N/A
Minimum Lot Width:	16'

Maximum Lot Coverage:	85%
Minimum Front Yard Setback (Principal Uses):	6' (all conditions)
Minimum Side Yard Setback (Principal Uses):	5' (all conditions)
Minimum Rear Yard Setback (Principal Uses):	4' (to alley)
Setback from collector street ROW:	parking: 15'; building: 10'
Setback from local street ROW:	parking: 5'; building: 5'
Minimum building separation:	10'
Maximum Building height:	55' (principal); 35' (accessory)

The multi-family units consist of 10 multiplex apartment buildings clustered around a common open space. The open space area will provide pedestrian connections leading to the adjacent trails and a clubhouse/pool.

Height
The preliminary PUD proposes the buildings be built to heights previously approved by the GDP: Single-family structures will be permitted up to 35' in height and all Multi-family structures will be permitted up to 55' in height. When staff reviews a height request we use an exercise known as a "shadow analysis". This is a modeling exercise to show where potential shadows will be casted at all times of the year and is used to show if there are any detrimental effects of the proposed buildings on existing structures. In the case of Steel Ranch South, all proposed new development is north of the nearest development, Christopher Village. Therefore shadows will not be a detriment on the surrounding structures and "shadow casting" is not required.

Parking
Typical site layouts of Planning Area 4A reflect that each unit will meet the required off-street parking requirement of two spaces per unit. On street parking is also being provided for quests. Each unit being proposed is an alley loaded model, therefore there will be no front garage loaded units.

Phasing Plan
A provided phasing plan in the PUD reflects Planning Area 4B, the multi-family development, will be built first, with the intent to start construction in early summer.

Transportation
The primary access for this development is from Hecla Drive and ultimately Hwy 42. Secondary access is proposed from South Boulder Road. South Boulder Road access would primarily be for right-in only and emergency egress for the following reasons:

a. *Property frontage along South Boulder Road* - Due to the limited width of the property frontage along South Boulder Road (approximately 200 feet) there isn't enough separation between the existing access at Christopher Village and the BNSF Right of Way for a new access.

b. *BNSF & South Boulder Road median* - The existence of the median along South Boulder Road prohibits anything but a right-out movement. The

median was created as a safety system for the nearby BNSF rail line. Having a raised 6 inch median prohibits vehicles from weaving past the existing mast arms once they go down while a train is crossing. BNSF, RTD nor the City of Louisville would permit the removal of the median to allow for a full turn access point.

c. *Proximity to Main Street intersection* – The only option for outgoing traffic to go east would be to try and maneuver their way to the Main Street left turn lane and make a u-turn at the traffic signal. The Main Street intersection is located approximately 30 feet from the eastern property line which does not give the outgoing west bound traffic adequate time to make the transition to the Main Street left hand turn lane. The next u-turn opportunity going west bound would be a u-turn at Circle Drive, a residential street.

Parks, Recreation, Trail and Open Space
Through the public land dedication described above, the applicant is creating the opportunity for a connection of trails east and west, as well as providing an on-street connection from north to south. Both of these trail connections are considered necessary to connect existing trails into a regional trail system.

The Parks and Recreation Department, along with the Open Space Advisory Board (OSAB) support the idea of having a regional trail connection within this open space area. It is anticipated the trail connection would also include a trailhead parking lot and bathroom facility.

Urban Form
The proposed development of Steel Ranch will create another neighborhood in the Takoda Subdivision. The physical design of the development generates a block pattern and public space plan that provided multiple travel options both in routing and travel mode choice. The proposed block pattern and street network ensures the public land dedication is fronted by homes and not privatized with homes backing to the open space.

STAFF RECOMMENDATION:
Staff recommends approval of the requested preliminary Plat and preliminary PUD for the development called Steel Ranch South. The proposal will allow for the development of multi-family housing units, which is a product type discussed in the 2009 Comprehensive Plan and consistent with the parcel's General Development Plan.

Staff recommends the following conditions of approval:

1. The applicant shall continue to work with the Public Works Department on alternative design considerations for intersection turning radii prior to the Final Plat and PUD submittal.
2. The applicant shall continue to work with the Parks and Recreation Department to finalize the public land dedication prior to Final Plat and PUD submittal.

3. The applicant shall continue to work with the Davidson Highline and Goodhue Ditch companies on the required ditch easements and design. Final acceptance of the easements will be required prior to final submittal.

ATTACHMENTS:

1. Resolution No., Series 2011
2. Application documents – Land Use Application, Letter of Intent, etc.
3. Preliminary Plat
4. Preliminary PUD
5. Steel Ranch South Road width Design Alternatives

RESOLUTION NO. 29
SERIES 2011

A RESOLUTION RECOMMENDING APPROVAL OF A PRELIMINARY SUBDIVISION PLAT AND PRELIMINARY PLANNED UNIT DEVELOPMENT (PUD) FOR AN APPROXIMATE 17 ACRE PARCEL OF THE TAKODA SUBDIVISION. THE INTENT OF THE REQUEST IS TO DEVELOP THE PROPERTY WITH A MAXIMUM OF 306 RESIDENTIAL UNITS WITH A VARIETY OF HOUSING PRODUCTS (220-240 APARTMENTS AND 60-70 TOWNHOMES OR DUPLEXES), CONSISTENT WITH THE PARCEL'S GENERAL DEVELOPMENT PLAN

WHEREAS, there has been submitted to the Louisville Planning Commission an application for approval of a preliminary subdivision plat and preliminary planned unit development (PUD) for an approximate 17 acre parcel of the Takoda Subdivision. The intent of the request is to develop the property with a maximum of 306 residential units with a variety of housing products (220-240 apartments and 60-70 townhomes or duplexes), consistent with the parcel's General Development Plan; and

WHEREAS, the City Staff has reviewed the information submitted and found it to comply with Louisville Municipal Code Sec. 16.12.030 and Sec. 17.28.170; and

WHEREAS, after a duly noticed public hearing on December 8, 2011 and continued to January 12, 2012, where evidence and testimony were entered into the record, including the findings in the Louisville Planning Commission Staff Reports dated December 8, 2011 and January 12, 2012, the Planning Commission finds the Steel Ranch South Preliminary Subdivision Plat and Preliminary PUD Plan should be approved with the following conditions:

1. The applicant shall continue to work with the Public Works Department on alternative design considerations for intersection turning radii prior to the Final Plat and PUD submittal.
2. The applicant shall continue to work with the Parks and Recreation Department to finalize the public land dedication prior to Final Plat and PUD submittal.
3. The applicant shall continue to work with the Davidson Highline and Goodhue Ditch companies on the required ditch easements and design. Final acceptance of the easements will be required prior to final submittal.

NOW THEREFORE, BE IT RESOLVED that the Planning Commission of the City of Louisville, Colorado does hereby recommend approval of a Preliminary Subdivision Plat and Preliminary PUD, Steel Ranch South Subdivision with the following conditions:

1. The applicant shall continue to work with the Public Works Department on alternative design considerations for intersection turning radii prior to the Final Plat and PUD submittal.
2. The applicant shall continue to work with the Parks and Recreation Department to finalize the public land dedication prior to Final Plat and PUD submittal.
3. The applicant shall continue to work with the Davidson Highline and Goodhue Ditch companies on the required ditch easements and design. Final acceptance of the easements will be required prior to final submittal.

PASSED AND ADOPTED this 12th day of January, 2012.

By: _____
Jeff Lipton, Chairman
Planning Commission

Attest: _____
Chris Pritchard, Secretary
Planning Commission

City of Louisville

Department of Planning and Building Safety

749 Main Street • Louisville CO 80027 • 303.335.4592 • www.louisvilleco.gov

RECEIVED
OCT 10 2011
PLANNING

LAND USE APPLICATION

CASE NO. 11-038-PS/PP

APPLICANT INFORMATION

Firm: RMCS, LLC
Contact: DAVID WALDNER
Address: 950 SPRUCE ST. #2A
LOUISVILLE, CO 80027
Mailing Address: 950 SPRUCE ST #2A
LOUISVILLE, CO 80027
Telephone: 720-524-3620
Fax: 720-565-1488
Email: rmcs4535@gmail.com

OWNER INFORMATION

Firm: RMCS, LLC
Contact: DAVID WALDNER
Address: 950 SPRUCE ST. #2A
LOUISVILLE, CO 80027
Mailing Address: 950 SPRUCE ST. #2A
LOUISVILLE, CO 80027
Telephone: 720-524-3620
Fax: 720-565-1488
Email: rmcs4535@gmail.com

REPRESENTATIVE INFORMATION

Firm: RMCS, LLC
Contact: DAVID WALDNER
Address: 950 SPRUCE ST. #2A
LOUISVILLE, CO 80027
Mailing Address: 950 SPRUCE ST. #2A
LOUISVILLE, CO 80027
Telephone: 720-524-3620
Fax: 720-565-1488
Email: rmcs4535@gmail.com

PROPERTY INFORMATION

Common Address: TBD - SOUTH BOULDER RD.
Legal Description: Lot 1/3A Blk 10/-
Subdivision: TAKODA / DAVIDSON HIGHLAND
Area: 17.32 ACRES Sq. Ft.

TYPE (S) OF APPLICATION

- ☐ Annexation
- ☐ Zoning
- ☒ Preliminary Subdivision Plat
- ☐ Final Subdivision Plat
- ☐ Minor Subdivision Plat
- ☒ Preliminary Planned Unit Development (PUD)
- ☐ Final PUD
- ☐ Amended PUD
- ☐ Administrative PUD Amendment
- ☐ Special Review Use (SRU)
- ☐ SRU Amendment
- ☐ SRU Administrative Review
- ☐ Temporary Use Permit: _____
- ☐ CMRS Facility: _____
- ☐ Other: (easement / right-of-way; floodplain; variance; vested right; 1041 permit; oil / gas production permit)

PROJECT INFORMATION

Summary: PRELIMINARY PLANNED UNIT DEVELOPMENT FOR 306 RESIDENTIAL UNITS TO BE DEVELOPED AS 220 - 240 APARTMENTS AND 60 - 70 TOWNHOME OR DUPLEXES.

Current zoning: PCZD-R Proposed zoning: PCZD-C/R

SIGNATURES & DATE

Applicant: David Walch
Print: DAVID WALDNER
Owner: David Walch
Print: DAVID WALDNER
Representative: David Walch
Print: DAVID WALDNER

CITY STAFF USE ONLY

- ☐ Fee paid: _____
- ☐ Check number: _____
- ☐ Date Received: _____

RMCS, LLC
950 Spruce Street, Suite 2A
Louisville CO, 80027

October 10, 2011

Mr. Sean McCartney, Principal Planner
Mr. Troy Russ, Planning Director
City of Louisville Planning Department
749 Main Street
Louisville, CO 80027

RE: Submittal Letter for the 1st Amendment to the Takoda General Development Plan

Mr. McCartney,

RMCS, LLC would like to thank the Planning Commission for giving us the opportunity to present the Steel Ranch South PUD and Subdivision Plat. Since 2006, RMCS has been working diligently with longtime local landowners and the City of Louisville in an effort to assemble the various parcels of land in this area of the City into a cohesive neighborhood with a diversity of housing products, parks and regional trail connections. The planning for this area has been organized under the Takoda General Development Plan, the Takoda Planned Unit Development, and the Takoda Subdivision, which were approved in 2008. RMCS has worked with the City of Louisville in a spirit of cooperation during the years of planning and approvals to make this a neighborhood which the citizens of Louisville can enjoy and be proud of.

The trails, parks, and infrastructure in the first phases of the development (which consist of 152 single family detached lots and a 5.5 acre commercial pad) are nearly complete, and the first homes will be ready for new residents in November of this year. The homebuilders have rebranded the development as "Steel Ranch" as a tribute to the long time landowners in this area. RMCS has chosen to bring forward the final 17 acre phase of the development as the Steel Ranch South Subdivision, which will include 50-86 townhome/duplex units and a 220-240 unit apartment complex. The apartment complex will feature the amenities of a class A development, including a diversity of building sizes and styles in a clubhouse setting with a pool, exercise facilities, and outdoor gathering areas. Below are some of the features of this new neighborhood.

General information about the Steel Ranch South Subdivision:

The 17 acre Steel Ranch South Subdivision is an assemblage of three properties that were rezoned in the 1st Amendment to the Takoda General Development Plan Planning Area 4 (GDP) which was approved by Planning Commission and then City Council in August 2011. This document spells out the height, bulk, and dimension standards that apply to the 306 units of residential entitlement, as well as the general layout of the street and trail connections to any adjacent properties. The Preliminary Steel Ranch Planned Unit Development (PUD) that we now present for your approval builds on the GDP by showing the details of the public and private improvements that will be made within the subdivision. The PUD includes draft elevations of the buildings as well as the details of the internal system of utilities and the multimodal trail corridor.

RMCS, LLC
950 Spruce Street, Suite 2A
Louisville CO, 80027

Diversity of Housing:

The 2006 Louisville Comprehensive Plan calls for a mix of residential housing types in this area of Louisville (Opportunity Area 1) from a low residential density of less than 6 units per acre in the north transitioning to a higher density of 30 units per acre as the residences get closer to downtown in the southern part of the development. The Comprehensive Plan has been the guide for the planning of the Takoda/Steel Ranch development, and we have worked closely with Planning Commission, City Council, and City staff for over 5 years to turn the vision of the Comprehensive Plan into a reality.

The residential areas of the first phases of the Takoda/Steel Ranch development emphasize two distinct styles of single family detached homes…a larger front-loaded home for those who need the extra space to raise a family, and a more compact low maintenance patio home plan appealing to the needs of "empty nesters" who want a home where they can live comfortably for years to come. Both of these housing products have been very well received both by current Louisville residents who want to stay in Louisville and be able to enjoy the convenience, comfort and efficiencies of a new-construction home, and by new residents who want to make Louisville their new hometown.

We continue to follow the guidance of the Comp Plan with the addition at Steel Ranch South of a higher density townhome/duplex neighborhood which transitions into the apartment community.

Multi-model Connection:

Takoda and Steel Ranch South have been planned with an emphasis on a system of street and trail corridors that will allow residents connectivity within the neighborhood, and to the rest of Louisville. The Steel Street multi-model corridor will be the final link in this plan.

The Steel Street right of way will connect at its northern terminus to the half mile of park and open space trails that have just been completed in the first phases of Takoda. Steel Street will feature designated 5 foot wide concrete bike paths on each side of the street to efficiently move cyclists between the Takoda/Steel Ranch development and the downtown area of Louisville. The Steel Street right of way will also include a 6 foot wide detached sidewalk to comfortably accommodate pedestrian travel.

We appreciate the time and effort that City staff, Planning Commission, and City Council have taken to work with us over the last 5 years to make Takoda/Steel Ranch a great addition to the City of Louisville, and we thank you for this opportunity to present the last phase of this new neighborhood.

Rick Brew
RMCS, LLC
950 Spruce Street
Louisville, Co 80027

STEEL RANCH SOUTH
PRELIMINARY SUBDIVISION PLAT
SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO

LEGAL DESCRIPTION Steel Ranch South:

LEGAL DESCRIPTION:
Steel Ranch South

A tract of land located in the Southeast ¼ of Section 5, Township 1 South, Range 69 West of the 6th P.M., more particularly described as follows:

Beginning at the Southwest corner of Outlot 8, Takoda Subdivision, a point on the East line of the Colorado and Southern Railroad right of way;
Thence S 89°20'27" E, 302.22 feet along the South line of said Outlot 8 to the Southeast corner of said Outlot 8 and the Southwest corner of Tract O, Takoda Subdivision;
Thence N 19°13'13 E, 65.68 feet along the South line of said Tract O to the Southeast corner of said Tract O;
Thence N 19°13'13 E, 49.09 feet along the South line of Outlot 8, Takoda Subdivision to the Northwest corner of Outlot B, Davidson Highline Subdivision;
Thence N 69°22'23" E along the North line of said Outlot B, 489.87 feet to a point on the East line of Hecla Drive right-of-way;
Thence S00°04'08" W, 6.33 feet along said East line of Hecla Drive right-of-way;
Thence along a curve to the left with a radius of 595.00 feet, a length of 209.63 feet and the chord bears S 10°01'28" E, 208.55 feet along said East line of Hecla Drive right-of-way to the Southwest corner of Lot 2A, Davidson Highline Subdivision Replat;
Thence N 89°58'37" E, 73.79 feet along the South line of said Lot 2A, Davidson Highline Subdivision Replat to the Southwest corner of Tract Q, Takoda Subdivision;
Thence N 89°59'23" E, 40.09 feet along the South line of said Tract Q to the Northwest corner of that tract of land recorded June 28, 1971 at Reception No. 980789, Boulder County records;
Thence S 00°03'59" W along the West line of said tract, 849.37 feet to the Southwest corner of said tract and a point on the North line of Christopher Village Filing 4 Subdivision;
Thence S 55°08'59" W along said North line of Christopher Village Filing 4 Subdivision, 108.40 feet;
Thence N 89°47'15" W along said North line of Christopher Village Filing 4 Subdivision, 186.75 feet to the Northwest corner of said Christopher Village Filing 4 Subdivision;
Thence S 24°00'00" E along the West line of said Christopher Village Filing 4 Subdivision, 432.21 feet to the Southwest corner of said Christopher Village Filing 4 Subdivision and a point on the Northerly Right-of-Way of South Boulder Road;
Thence N 89°51'42" W along said Northerly Right-of-Way of South Boulder Road, 190.98 feet to a point on the East line of the Colorado and Southern Railroad right of way;
Thence along said East right of way line along a curve to the left with a radius of 2034.80 feet, a length of 701.21 feet and the chord bears N 24°38'30" W, 697.75 feet;
Thence N 31°36'45" W along said East right of way line, 701.49 feet to the Southwest corner of said Outlot 8, the Point of Beginning.

County of Boulder, State of Colorado

Area = 17.32 acres

has laid out, subdivided and platted said land as per drawing hereon contained under the name and style of "Steel Ranch South", a subdivision of a part of the City of Louisville, County of Boulder, State of Colorado, and by these presents do hereby dedicate to the City of Louisville and the public Outlots 1-2, all public rights-of-way, the ingress-egress and fire lane easements for vehicular, pedestrian and emergency access and the public use thereof forever and does further dedicate to the use of the City of Louisville and all municipally owned and/or franchised utilities and services those portions of said real property which are so designated as easements and right-of-ways for the construction, installation, operation, maintenance, repair and replacement for all services, including without limiting the generality of the foregoing, telephone and electric lines, works, poles and underground cables, gas pipelines, water pipelines, sanitary sewer lines, street lights, culverts, hydrants, drainage ditches and drains and all appurtenances thereto, it being expressly understood and agreed by the undersigned that, except as expressly provided by written agreement with the City of Louisville, all expenses and costs involved in constructing and installing sanitary sewer system works and lines, gas service lines, electrical service works and lines, storm sewers and drains, street lighting, grading and landscaping, curbs, gutters, street pavement, sidewalks and other such utilities and services shall be guaranteed and paid for by the subdivider or arrangements made by the subdivider thereof which are approved by the City of Louisville, Colorado, and such sums shall not be paid by the City of Louisville, Colorado, and that any item so constructed or installed when accepted by the City of Louisville, Colorado, shall become the sole property of said City of Louisville, Colorado, except private roadway curbs, gutter and pavement and items owned by municipally franchised utilities and/or CenturyLink, Inc. which when constructed or installed, shall remain the property of the owner and shall not become the property of the City of Louisville, Colorado.

NOTES:

1) LAND TITLE GUARANTEE COMPANY, TITLE COMMITMENT NO. WT0297742, DATED MARCH 3, 2011 AND STEWART TITLE OF COLORADO, TITLE COMMITMENT ORDER NO. 50179371 S3, 3rd REVISION, DATED MAY 8, 2007 WERE ENTIRELY RELIED UPON FOR EASEMENTS OF RECORD AND TITLE INFORMATION. SEE SCHEDULE B FOR EXCEPTIONS.

2) THE BASIS OF BEARING IS S00°03'59"W BETWEEN THE FOUND MONUMENTS ALONG THE EAST LINE OF LOT 1, LOT 10, TAKODA SUBDIVISION PLAT, RECORDED OCTOBER 6TH 2010, RECEPTION NUMBER 3103584.

3) ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, C.R.S.

4) DIMENSIONS SHOWN WITHOUT PARENTHESES, ARE AS MEASURED BY RMCS SURVEYING LLC AND PER THE RECORD DESCRIPTION. DIMENSIONS SHOWN IN PARENTHESES ARE PER THE RECORDED DESCRIPTION.

5) THIS DRAWING IS BASED ON A FIELD SURVEY PERFORMED & COMPLETED BY RMCS SURVEYING, LLC ON OR ABOUT AUGUST 10, 2011.

6) NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED ON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVERED SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN SIX YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON. CRS 13-80-104(1)(A)

7) THE LOCATION OF THE ABOVE GROUND UTILITIES SHOWN HEREON ARE BASED ON THE FIELD SURVEY BY RMCS SURVEYING LLC. RMCS SURVEYING LLC IS NOT RESPONSIBLE FOR UTILITY INFORMATION PROVIDED BY OTHERS. RMCS SURVEYING LLC RECOMMENDS THAT THE LOCATION OF THE UTILITIES BE FIELD VERIFIED PRIOR TO ANY DIGGING ON, OR ADJACENT TO THE SUBJECT PROPERTY.

8) THE LAND USE CHART PRESENTED HEREON IS PROVIDED TO OUTLINE THE GENERAL USE OF EACH OUTLOT, BOTH PRIVATE AND PUBLIC.

9) THE CITY OF LOUISVILLE SHALL REVIEW AND APPROVE THE LOCATIONS OF UTILITY LINES, PEDESTALS AND CABINETS WITHIN PUBLIC PROPERTY AND WITHIN CITY OF LOUISVILLE EXCLUSIVE WATER, STORM AND SANITARY SEWER EASEMENTS.

10) THE MINIMUM SEPARATION BETWEEN WATER AND SANITARY SHALL BE 10' OUTSIDE OF PIPE TO OUTSIDE OF PIPE. SEPARATION BETWEEN ALL OTHER UTILITIES SHALL NOT BE LESS THAN 7' TO THE EXTENT PRACTICAL BASED ON CONSTRUCTABILITY, COST, RIGHT-OF-WAY AND ASSOCIATED STREET WIDTHS, ETC. THE CITY WILL WORK WITH THE SUBDIVIDER TO GENERATE PRACTICAL SOLUTIONS FOR AREAS OF UTILITY SEPARATION CONCERNS.

11) ALL UTILITY EASEMENTS 10' IN WIDTH OR LESS ARE SPECIFICALLY RESERVED FOR DRY UTILITY FACILITIES. UTILITY EASEMENTS GREATER THAN 10' IN WIDTH ARE SPECIFICALLY EXCLUSIVE FOR CITY OF LOUISVILLE WATER, SANITARY AND STORM SEWERS. DRY UTILITIES ARE REQUIRED TO REQUEST PERMISSION/APPROVAL FROM THE CITY AND THE DEVELOPER FOR CROSSING WET UTILITY EASEMENTS. DRY UTILITIES THAT ARE APPROVED TO CROSS CITY EASEMENTS SHALL DO SO AT SUBSTANTIALLY RIGHT ANGLES. WET UTILITIES MAY TRAVERSE DRY UTILITY EASEMENTS WITHOUT SPECIAL PERMISSION.

12) THE GOODHUE DITCH EASEMENT IS 25.0' ACCORDING TO THE IMPROVEMENT SURVEY PLAT DATED 12-19-95, LS #16406, BOULDER COUNTY FILE LS-95-0218. THE EASEMENT SHOWN ON THE SUBJECT PROPERTY IS AN EXTENSION OF THIS 25.0' WIDTH.

13) EMERGENCY AND CITY OF LOUISVILLE MAINTENANCE ACCESS IS GRANTED HEREWITH OVER AND ACROSS ALL PAVED AREAS FOR POLICE, FIRE AND EMERGENCY VEHICLES.

14) THE CITY OF LOUISVILLE IS GRANTED A WATER SERVICE LINE EASEMENT, EIGHT (8') FEET IN WIDTH BETWEEN THE EDGE OF A TRACT OR RIGHT OF WAY AND THE WATER METER PIT CENTERED ON THE SERVICE LINE.

LEGAL DESCRIPTION OF PROPERTIES INCORPORATED IN STEEL RANCH SUBDIVISION

Lot 3A, Davidson Highline Subdivision Replat. Located in Section 5, Township 1 South, Range 69 West of the 6th P.M., City of Louisville, Boulder County, Colorado

Lot 1, Block 10, AND TRACT P, Takoda Subdivision, Located in Section 5, Township 1 South, Range 69 West of the 6th P.M., City of Louisville, Boulder County, Colorado

(5.93 acre RMCS, LLC parcel)

A tract of land located in the SE ¼ of Section 5, Township 1 South, Range 69 West of the 6th P.M. Described as follows:

Beginning at a point in the South line of said Section 5 whence the Southeast corner of said Section 5 bears North 89°45' East, 863.00 feet; Thence North 24°20' West, 1,411.00 feet; Thence North 89°45' West, 252 feet to a point on the East line of the Colorado and Southern Railway Company's right of way; Thence Southerly along said East line of said right of way to the intersection thereof with the said South line of Section 5. Thence Easterly along said Section line to the Point of Beginning,
Except that portion lying within South Boulder Road AKA County Road No. 80 on the South.
County of Boulder
State of Colorado

Vicinity Map
Scale: 1" = 2000'

OWNERSHIP CERTIFICATE

Owner: RMCS LLC, A COLORADO LIMITED LIABILITY COMPANY, A/K/A RMCS, LLC, A COLORADO LIMITED LIABILITY COMPANY

By________________________
David Waldner: General Manager

Acknowledgment

STATE OF COLORADO)
) ss
COUNTY OF BOULDER)
The foregoing instrument was acknowledged before me this ______ day of ________________, 20____, by ________________

Witness my Hand and Seal.
My Commission expires ________________ ________________
Notary Public

MORTGAGE INTEREST HOLDER(S) CONSENT TO DEDICATION

MORTGAGEE CONSENT TO DEDICATION: The undersigned holders of mortgage interests and liens against the property offered for dedication and transfer to the public and City of Louisville hereby consents to and approves of such dedication and transfer and hereby subordinates and releases its interests to such dedicated and transferred property.

In Witness Whereof, we do hereunto set our hands and seals this ________ day of ________

____
Mutual of Omaha Bank

STATE OF ________)
) ss
County of ________)

Witness my hand and official seal.

____

CLERK AND RECORDER'S CERTIFICATE

STATE OF COLORADO)
) ss
COUNTY OF BOULDER)

I hereby certify that this instrument was filed in my office at ________ o'clock___M., on this__________day of__________, 20____, and is recorded in Plan file__________________, Fee__________

Paid________________ Film No. ________________ Reception

Recorder ________________ Deputy ________________

PLANNING COMMISSION CERTIFICATE

Recommended approval this _____ day of ____________ 20____, by the Planning Commission of the City of Louisville, Colorado. Resolution No. __________, Series ________

CITY COUNCIL CERTIFICATE

Approved this____day of__________20____ by the City Council of the City of Louisville, Colorado. Resolution No.__________, Series ________

________________ ________________
Mayor City Clerk

CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	62.83	887.09	3°14'30"	S05°56'43"E	62.80
C2	23.82	15.00	87°15'37"	N34°53'43"E	20.88
C3	5.08	31.00	5°42'38"	N75°37'42"E	5.08
C6	30.35	198.50	8°42'39"	S27°15'15"E	30.32
C7	27.18	683.00	2°16'49"	S24°02'10"E	27.18
C8	41.53	299.00	7°57'28"	S21°11'51"E	41.49
C9	88.35	41.00	95°30'47"	S64°58'31"E	80.70
C10	17.88	14.00	73°36'02"	S75°55'54"E	16.77
C11	11.76	26.50	25°25'39"	S01°50'43"E	11.66
C12	9.55	9.00	60°47'19"	S01°39'19"E	9.11
C15	58.76	655.00	5°08'23"	N44°37'08"W	58.74
C17	8.27	59.50	7°57'46"	N54°24'19"E	8.26
C18	57.13	58.50	55°50'53"	N22°54'59"E	54.88
C20	22.60	15.00	86°19'13"	N58°21'22"W	20.52
C21	4.88	49.00	5°42'38"	N75°37'42"E	4.88
C22	3.14	4.00	45°00'00"	N80°53'15"E	3.06
C23	23.56	15.00	90°00'00"	S13°23'15"W	21.21
C26	80.04	665.00	6°53'45"	S44°31'54"E	79.89
C27	3.92	24.00	9°21'45"	N46°46'16"E	3.92
C29	1.61	9.50	9°42'19"	N08°39'48"W	1.61
C30	9.98	9.50	60°11'55"	N28°17'18"E	9.53
C32	131.53	375.00	20°05'47"	S68°26'08"W	130.86
C33	22.48	14.50	88°49'25"	N20°24'43"E	20.29
C35	56.55	36.00	90°00'00"	S13°23'15"W	50.91
C38	21.07	655.00	1°50'36"	N02°18'32"W	21.07
C39	7.19	59.50	6°55'31"	N08°03'13"W	7.19
C40	7.28	2.50	166°56'25"	S66°15'05"W	4.97
C41	41.16	314.50	7°29'56"	S34°01'40"E	41.13
C42	19.57	18.50	60°35'50"	S47°31'02"E	18.67
C43	23.21	9.50	139°57'41"	N32°12'12"E	17.85
C44	31.50	19.50	92°33'20"	N70°18'40"W	28.19

CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C46	176.42	655.00	15°41'42"	S23°52'37"E	175.88
C47	23.65	655.00	2°04'08"	S31°50'32"E	23.65
C48	26.98	655.00	2°37'23"	S34°16'17"E	26.98
C49	2.51	14.50	9°55'34"	S58°28'54"W	2.51
C51	5.32	9.50	32°06'32"	N21°43'22"W	5.25
C52	17.87	9.50	107°46'49"	N48°17'38"E	15.35
C53	4.71	6.00	45°00'00"	N80°53'15"E	4.59
C55	8.00	665.40	0°41'20"	S38°27'42"E	8.00
C56	6.19	2.50	141°56'29"	S55°45'07"W	4.73
C57	1.09	2.50	24°59'56"	N42°46'40"W	1.08
C58	12.57	4.00	180°00'00"	S11°30'58"E	8.00
C59	12.57	4.00	180°00'00"	N11°30'58"W	8.00
C60	36.51	294.67	7°05'54"	S35°36'34"E	36.48
C62	44.09	286.50	8°49'02"	S34°43'21"E	44.05
C63	28.27	18.00	90°00'00"	S76°36'45"E	25.46
C64	31.42	20.00	90°00'00"	S13°23'15"W	28.28
C65	59.69	38.00	90°00'00"	S76°36'45"E	53.74
C66	62.83	40.00	90°00'00"	S13°23'15"W	56.57
C67	6.07	286.50	1°12'52"	S29°42'24"E	6.07
C68	19.62	286.50	3°55'23"	S27°08'17"E	19.61
C71	24.01	665.40	2°04'01"	S37°25'41"E	24.00
C72	12.57	4.00	180°00'00"	S38°32'52"E	8.00
C73	16.00	665.40	1°22'41"	S36°50'22"E	16.00
C74	17.34	48.00	20°41'51"	N52°12'55"E	17.25
C75	73.16	165.00	25°24'13"	N29°23'17"E	72.56
C76	59.33	135.00	25°10'48"	N29°16'20"E	58.85
C77	14.82	220.51	3°51'05"	N29°53'11"W	14.82
C78	22.60	246.00	5°15'52"	N25°31'42"W	22.59

LINE TABLE		
LINE #	BEARING	DISTANCE
L1	N24°00'00"W	29.80
L2	N64°48'25"E	3.90
L3	N19°16'48"E	26.09
L4	S83°26'40"W	7.80
L5	S89°56'01"E	10.00
L6	N89°56'01"W	10.00
L7	N89°56'01"W	3.17
L8	S89°56'01"E	3.17
L9	N00°03'59"E	15.00
L10	N01°27'08"E	15.05
L11	S01°27'08"W	14.58
L12	N01°27'08"E	14.63
L13	S01°27'08"W	23.54
L14	S89°56'01"E	15.00
L15	N00°03'59"E	3.50
L16	S89°56'01"E	8.50
L17	S00°03'59"W	3.50
L18	S00°04'35"W	6.00
L19	N17°13'07"W	60.80
L20	N00°03'59"E	11.19
L21	N31°36'45"W	6.57
L22	S76°53'15"W	17.54
L23	N62°33'50"E	26.27
L24	N16°41'11"E	14.11
L25	N16°41'11"E	26.71
L27	S39°07'53"E	6.03
L28	N72°48'53"E	7.50

LINE TABLE		
LINE #	BEARING	DISTANCE
L29	S76°36'45"E	7.17
L30	N78°29'02"E	24.00
L31	N39°07'53"W	6.33
L32	S78°29'02"W	24.00
L33	S85°56'09"E	5.13
L34	S31°36'45"E	13.00
L35	N31°36'45"W	13.00
L36	S31°36'45"E	13.00
L37	S31°36'45"E	17.00
L38	S31°36'45"E	17.00
L39	S31°36'45"E	13.00
L40	N31°36'45"W	17.00
L41	N31°36'45"W	17.00
L42	S31°36'45"E	13.00
L43	S31°36'45"E	13.00
L44	N31°36'45"W	17.00
L45	N31°36'45"W	17.00
L46	N31°36'45"W	13.00
L47	N58°23'15"E	11.00
L48	N31°36'45"W	12.43
L50	N00°19'48"E	33.73
L51	S58°23'15"W	9.00
L52	N58°23'15"E	11.00
L53	S89°42'12"E	8.15
L55	N78°53'15"E	20.36
L56	S58°23'15"W	9.00
L57	S78°24'01"W	17.00

NEAREST SCHOOLS INTENDED TO SERVE SUBDIVISION

COAL CREEK ELEMENTARY
FIRESIDE ELEMENTARY
LOUISVILLE MIDDLE SCHOOL
MONARCH K-8
MONARCH H.S.

Sheet Index	
Sheet Number	Sheet Title
1	COVER SHEET
2	OVERALL
3	PRELIMINARY PLAT
4	PRELIMINARY PLAT

LEGEND:

—•—OL—•—	POWER POLE & OVERHEAD POWER LINES
△	SET 5/8" REBAR W/ALUMINUM CAP STAMPED "RMCS LS 28667"
⊡	FOUND #4 REBAR
⊗	WATER MAIN LINE MARKER
⋈	WATER VALVE
⊚	SANITARY MANHOLE
⌘	FIRE HYDRANT
Ⓦ	WATER MAIN MARKER POST

SURVEYOR'S CERTIFICATE

I, David Waldner, PLS28667, a duly registered land surveyor in the State of Colorado, do hereby certify that subdivision plat of Steel Ranch South truly and correctly represents the results of a survey made by me or under my direct supervision and done in accord with applicable State of Colorado requirements.

____
Surveyor name
Colorado P.L.S. #_28667_

DEDICATION SUMMARY

OUTLOT/TRACT	UNENCUMBERED AREA (ACRES)	ENCUMBERED AREA (ACRES)	TOTAL AREA (ACRES)	OWNERSHIP	PRIMARY USES	MAINTENANCE
OUTLOT						
1	0.34[1]	0.20	0.54	Louisville	Pedestrian Trail, Drainage, Utility Easement, Irrigation Ditch & Landscape	City of Louisville
2	0.03	-	0.03	Louisville	Landscape Island in Pubic ROW and Water Quality	Steel Ranch South H.O.A.
3	0.05[1]	0.56	0.61	Louisville	Pedestrian Trail, Drainage, Utility Easement, Irrigation Ditch, Maintenance Access, Secondary Emergency Access & Landscape	City of Louisville
4	0.01	-	0.01	Louisville	Landscape Island in Pubic ROW	Steel Ranch South H.O.A.
5	0.01	-	0.01	Louisville	Landscape Island in Pubic ROW and Water Quality	Steel Ranch South H.O.A.
TOTALS	0.44 AC.	0.76 AC.	1.20 AC.			
TRACT						
A	-	0.06	0.06	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
B	-	0.14	0.14	H.O.A.	Water Quality, Detention, Irrigation Ditch, Proposed Utility Easement, Signage & Landscape	Steel Ranch South H.O.A.
C	0.06	0.09	0.15	H.O.A.	Utility Easement & Landscape	Steel Ranch South H.O.A.
D	-	0.09	0.09	H.O.A.	Private & Emergency Access & Utility Easement	Steel Ranch South H.O.A.
E	0.10	0.14	0.24	H.O.A.	Existing & Proposed Utility Easement & Landscape	Steel Ranch South H.O.A.
F	-	0.16	0.16	H.O.A.	Water Quality, Detention, Landscape & Monument Sign, Pedestrian Trail	Steel Ranch South H.O.A.
G	0.71	0.34	1.05	H.O.A.	Monument Sign, Existing & Proposed Utility Easement & Landscape	Steel Ranch South H.O.A.
H	0.14	-	0.14	H.O.A.	Landscaping	Steel Ranch South H.O.A.
I	0.02	0.01	0.03	H.O.A.	Water Quality, Proposed Utility Easement, Signage & Landscape	Steel Ranch South H.O.A.
J	0.20	-	0.20	H.O.A.	Landscaping	Steel Ranch South H.O.A.
K	0.12	0.16	0.28	H.O.A.	Existing and Proposed Utility Easement, Landscape, Parking & Monument Sign	Steel Ranch South H.O.A.
L	-	0.70	0.70	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
M	-	0.05	0.05	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
N	-	0.08	0.08	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
O	-	0.07	0.07	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
TOTALS	1.26 AC.	2.18 AC.	3.44 AC.			

NOTE: EXISTING ENCUMBRANCES AND USES ARE NOTED ON THE DRAWINGS AND ARE NOT SUPERSEDED BY THE OWNERSHIP / USE TABLE.

[1] INCLUDES REGIONAL TRAIL WITHIN ENCUMBERED AREA

PREVIOUSLY PLATTED CITY OF LOUISVILLE OWNED PROPERTY

OUTLOT/TRACT	UNENCUMBERED AREA (ACRES)	ENCUMBERED AREA (ACRES)	TOTAL AREA (ACRES)	OWNERSHIP	USE	MAINTENANCE
OUTLOT B	0.01	0.19	0.20	Louisville	Pedestrian Trail, Utility Easement & Landscape	City of Louisville
HECLA R.O.W.	0.00	0.66	0.66	Louisville	Public Right of Way	City of Louisville

RMCS SURVEYING, LLC
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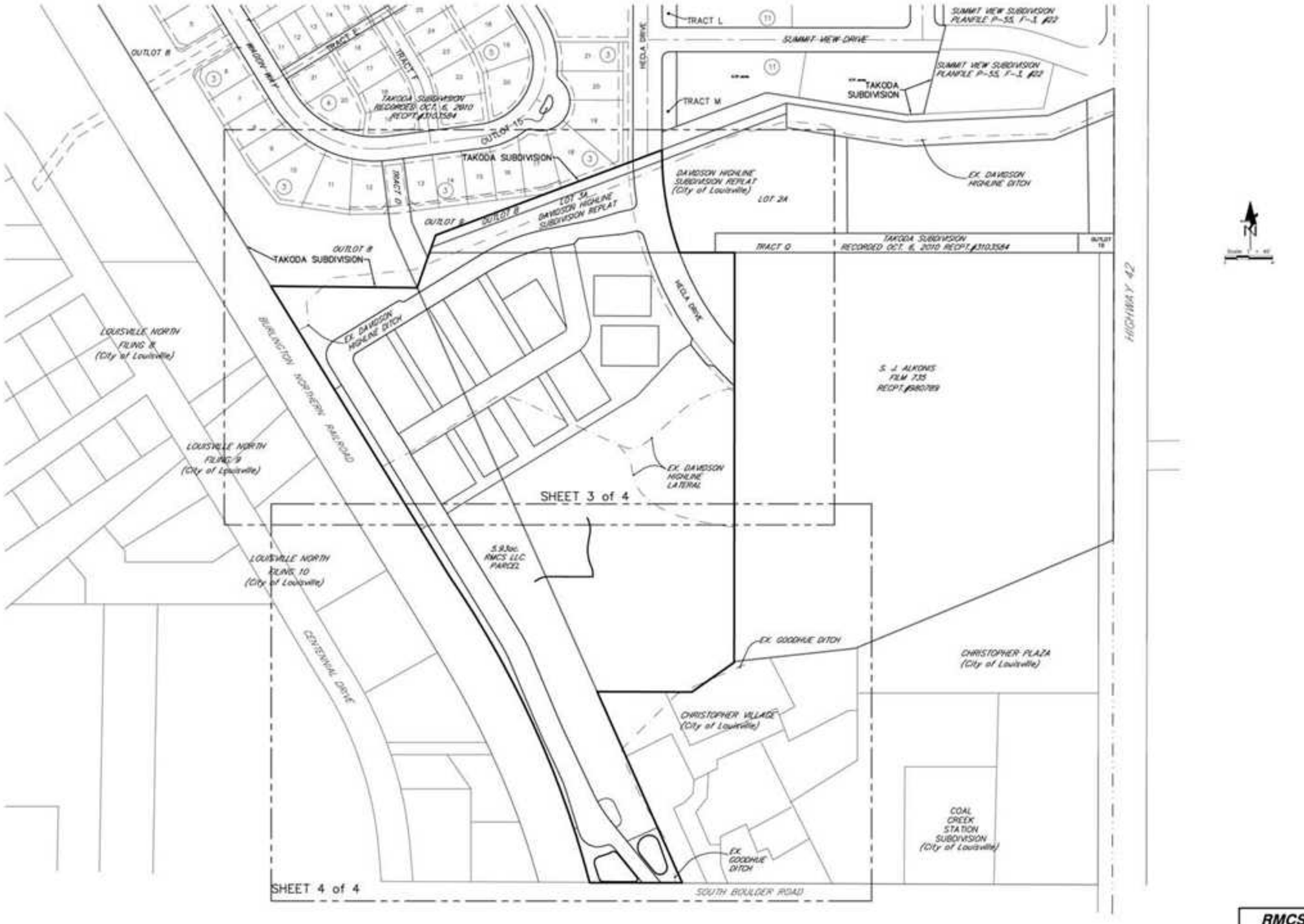
(303) 475-2106
(720) 565-1489 FAX

10/21/2011 | SHEET 1 OF 4

STEEL RANCH SOUTH

PRELIMINARY SUBDIVISION PLAT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOUNDER COUNTY, CITY OF LOUISVILLE, COLORADO



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10/21/2011 | SHEET 2 OF 4

STEEL RANCH SOUTH

PRELIMINARY SUBDIVISION PLAT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO

WAGON WAY
TAKODA SUBDIVISION
RECORDED OCT. 6, 2010
RECPT.#3103584
ASDFASDFASDF
Tract O
Outlot B
OUTLOT 4
OUTLOT 3
DAVIDSON HIGHLINE SUBDIVISION REPLAT
LOT 2A
Ex. Tract O
PART OF THE TAKODA SUBDIVISION
RECORDED OCT. 6, 2010
RECPT.#3103584
Point of Beginning
S89°20'27"E 302.22'
LUKE STREET (VARIES 36' R.O.W.)
OUTLOT 1
23,399sqft
BLOCK 11
9,794sqft
TRACT O
2,846sqft
BLOCK 5
10,179sqft
BLOCK 4
15,604sqft
BLOCK 3
15,604sqft
BLOCK 2
16,214sqft
BLOCK 10
9,784sqft
BLOCK 9
10,003sqft
BLOCK 8
9,877sqft
BLOCK 7
9,877sqft
BLOCK 6
10,184sqft
Block 1
LOT 1
311,477sqft
TRACT K
12,379sqft
TRACT H
3,902sqft
TRACT L
TRACT A
TRACT C
TRACT D
TRACT E
TRACT G
TRACT M
TRACT N
KALEL STREET (PRIVATE)
STEEL STREET (46.5' R.O.W.)
HECLA DRIVE (60' R.O.W.)
CENTENNIAL DRIVE
LOUISVILLE NORTH FILING 9
S. J. ALKONIS FILM 735 RECPT.#980789
846.37' S00°03'59"W (BASIS OF BEARING)
N69°22'23"E 499.87'
N69°22'23"E 445.85'
S78°29'02"W 197.95'
S84°15'40"W 92.11'
N38°42'56"E 14.30'
S89°40'12"E 118.00'
N89°40'12"W 118.00'
N89°58'37"E 73.79'
S89°59'23"E 40.09'
S00°04'08"W 6.33'
N58°23'15"E 17.40'
S45°36'56"E 6.18'
S31°34'35"E 6.18'
N31°36'45"W 701.49'
S31°36'45"E 250.66'
S58°23'15"W 458.72'
N00°03'59"E 130.10'
S00°03'59"W 115.74'
N89°56'01"E 113.00'
S89°56'01"E 113.00'
S83°32'32"E 15.54'
S58°23'28"W 29.76'
S13°23'18"W 13.71'
N89°40'12"W 22.57'
N89°40'12"W 10.23'
CURVE DATA R=33.00' L=51.84' Δ=90°00'00" B=S13°23'15"W CH=46.67'
CURVE DATA R=595.00' L=209.63' Δ=20°11'11" B=S10°01'28"E CH=208.55'
CURVE DATA R=655.00' L=80.96' Δ=7°04'56" B=S04°53'42"E CH=80.91'
CURVE DATA R=625.00' L=121.38' Δ=11°07'37" B=S05°37'10"E CH=121.18'
CURVE DATA R=625.00' L=360.79' Δ=33°04'30" B=S28°03'13"E CH=355.80'
CURVE DATA R=655.00' L=233.06' Δ=20°23'12" B=S25°23'22"E CH=231.85'
CURVE DATA R=595.00' L=222.95' Δ=21°28'08" B=S30°51'07"E CH=221.65'
CURVE DATA R=665.40' L=54.45' Δ=4°41'19" B=N38°42'07"W CH=54.44'
CURVE DATA R=34.50' L=42.09' Δ=69°54'14" B=N23°26'08"E CH=39.53'
CURVE DATA R=400.00' L=140.30' Δ=20°05'47" B=S68°26'08"W CH=139.58'
CURVE DATA R=413.00' L=109.03' Δ=15°07'35" B=N89°09'08"E CH=108.72'
CURVE DATA R=413.00' L=29.13' Δ=4°02'35" B=N87°40'35"E CH=29.12'
CURVE DATA R=413.00' L=6.69' Δ=0°55'42" B=N89°13'13"E CH=6.69'
CURVE DATA R=412.80' L=20.05' Δ=2°47'23" B=N88°08'08"E CH=20.04'
CURVE DATA R=412.80' L=104.08' Δ=14°27'04" B=N77°46'23"E CH=103.82'
CURVE DATA R=412.80' L=42.26' Δ=5°51'47" B=N67°42'57"E CH=42.24'
CURVE DATA R=412.80' L=23.32' Δ=3°14'08" B=N63°26'23"E CH=23.32'
CURVE DATA R=412.80' L=42.26' Δ=5°51'47" B=N57°48'23"E CH=42.24'
CURVE DATA R=412.80' L=23.32' Δ=3°14'08" B=N53°26'23"E CH=23.32'
CURVE DATA R=412.80' L=42.26' Δ=5°51'47" B=N47°42'57"E CH=42.24'
CURVE DATA R=412.80' L=104.08' Δ=14°27'04" B=N36°46'23"E CH=103.82'
CURVE DATA R=412.80' L=20.05' Δ=2°47'23" B=N28°08'08"E CH=20.04'
CURVE DATA R=413.00' L=144.91' Δ=20°05'47" B=S68°26'08"W CH=144.13'
CURVE DATA R=413.00' L=6.69' Δ=0°55'42" B=S89°13'13"W CH=6.69'
CURVE DATA R=413.00' L=29.13' Δ=4°02'35" B=S87°40'35"W CH=29.12'
CURVE DATA R=413.00' L=109.03' Δ=15°07'35" B=S89°09'08"W CH=108.72'
CURVE DATA R=34.50' L=42.09' Δ=69°54'14" B=N23°26'08"E CH=39.53'
CURVE DATA R=33.00' L=51.84' Δ=90°00'00" B=S13°23'15"W CH=46.67'
CURVE DATA R=665.40' L=54.45' Δ=4°41'19" B=N38°42'07"W CH=54.44'
CURVE DATA R=655.00' L=80.96' Δ=7°04'56" B=S04°53'42"E CH=80.91'
CURVE DATA R=625.00' L=121.38' Δ=11°07'37" B=S05°37'10"E CH=121.18'
CURVE DATA R=595.00' L=209.63' Δ=20°11'11" B=S10°01'28"E CH=208.55'
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CURVE DATA R=34.50' L=42.09' Δ=69°54'14" B=N23°26'08"E CH=39.53'
CURVE DATA R=33.00' L=51.84' Δ=90°00'00" B=S13°23'15"W CH=46.67'
30' VISION CLEARANCE AREA (TYP. ALL PUBLIC STREETS)
15' VISION CLEARANCE AREA (TYP. ALL ALLEYS)
EX. 40.0' UTILITY EASEMENT FILM 713, REC. NO. 958523
EX. 75.0' PUBLIC SERVICE EASEMENT BOOK 713, PAGE 130 AT RECEPTION NO. 393625
EX. 14' ELECTRIC UTILITY EASEMENT RECPT. NO. 026294
EX. 40' UTILITY EASEMENT REC.NO. 798448 (SEWER & WATER)
EX. CENTERLINE 40' UTILITY EASEMENT FILM 713, REC. NO. 958523
EX. TEMPORARY TURNAROUND EASEMENT TO BE VACATED
EX. 50' IRRIGATION DITCH EASEMENT
EX. 10' UTILITY EASEMENT
EX. 15' CITY SANITARY SEWER EASEMENT
EX. 5' UTILITY EASEMENT
EX. 12' CITY OF LOUISVILLE MAINTENANCE & OPEN SPACE TRAIL EASEMENT
EX. 25' PUBLIC SERVICE EASEMENT BOOK 713, PAGE 130 AT RECEPTION NO. 393625
EX. SECONDARY EMER. ACCESS, UTILITY ACCESS, STORM SEWER EASEMENT, PEDESTRIAN TRAIL ACCESS, IRRIGATION DITCH ACCESS AND OUTLOT B R & M MAINTENANCE ACCESS
EX. 40' UTILITY EASEMENT - FILM 713, REC. NO. 958523
25' DRAINAGE EASEMENT
FUTURE REGIONAL TRAIL
60.0' DAVIDSON HIGHLINE DITCH EASEMENT
BURLINGTON NORTHERN RAILROAD IN SHOWN PER THE LAND SURVEY PLAT BY ORDER OF THE BOULDER COUNTY LAND USE DEPT.
10' DRY UTILITY EASEMENT
5' DRY UTILITY EASEMENT
6' DRY UTILITY EASEMENT
20.0' UTILITY EASEMENT
30.0' UTILITY EASEMENT
BUILDING F2 DU=27
BUILDING D2 DU=24
BUILDING E2 DU=4
BUILDING D1 DU=26
CLUB HOUSE
GARAGE
SAN
NOTE: ALL UTILITY EASEMENTS NOT SPECIFICALLY DESIGNATED FOR OTHERS (e.g. DRY UTILITY EASEMENTS) ARE THE SOLE OWNERSHIP OF THE CITY OF LOUISVILLE.

RMCS SURVEYING, LLC
950 SPRUCE STREET, SUITE 2A
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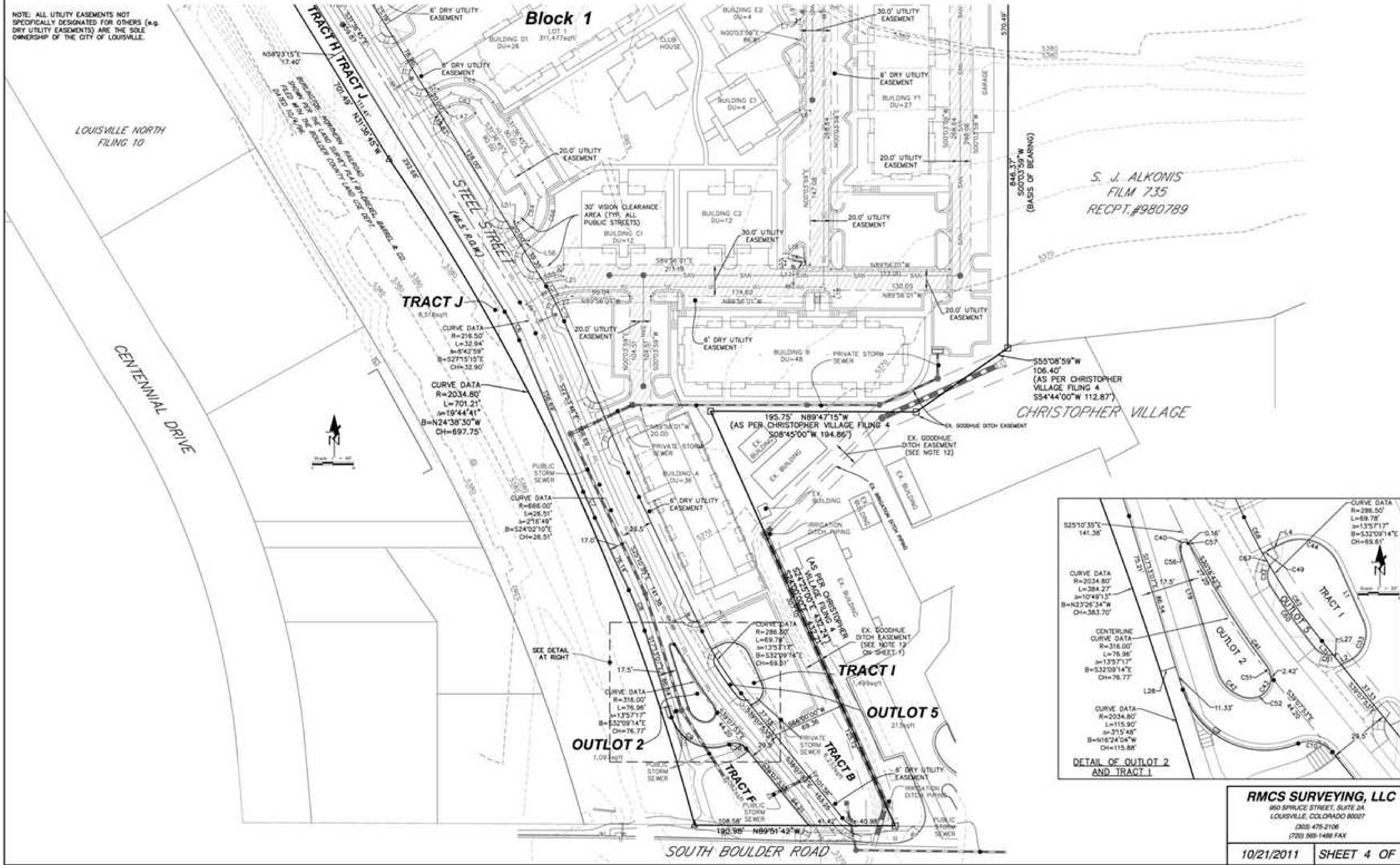
10/21/2011 | SHEET 3 OF 4

STEEL RANCH SOUTH

PRELIMINARY SUBDIVISION PLAT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



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10/21/2011 | SHEET 4 OF 4

STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO

LEGAL DESCRIPTION

STEEL RANCH SOUTH:

A TRACT OF LAND LOCATED IN THE SOUTHEAST ¼ OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M., MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF OUTLOT B, TAKODA SUBDIVISION, A POINT ON THE EAST LINE OF THE COLORADO AND SOUTHERN RAILROAD RIGHT OF WAY;
THENCE S 89°20'27" E, 302.22 FEET ALONG THE SOUTH LINE OF SAID OUTLOT B TO THE SOUTHEAST CORNER OF SAID OUTLOT B AND THE SOUTHWEST CORNER OF TRACT O, TAKODA SUBDIVISION;
THENCE N 19°13'13 E, 65.68 FEET ALONG THE SOUTH LINE OF SAID TRACT O TO THE SOUTHEAST CORNER OF SAID TRACT O;
THENCE N 19°13'13 E, 49.08 FEET ALONG THE SOUTH LINE OF OUTLOT 9, TAKODA SUBDIVISION TO THE NORTHWEST CORNER OF OUTLOT B, DAVIDSON HIGHLINE SUBDIVISION;
THENCE N 69°22'23" E ALONG THE NORTH LINE OF SAID OUTLOT B, 499.67 FEET TO A POINT ON THE EAST LINE OF HECLA DRIVE RIGHT-OF-WAY;
THENCE S00°04'08" W, 6.33 FEET ALONG SAID EAST LINE OF HECLA DRIVE RIGHT-OF-WAY;
THENCE ALONG A CURVE TO THE LEFT WITH A RADIUS OF 595.00 FEET, A LENGTH OF 209.63 FEET AND THE CHORD BEARS S 10°01'28" E, 208.55 FEET ALONG SAID EAST LINE OF HECLA DRIVE RIGHT-OF-WAY TO THE SOUTHWEST CORNER OF LOT 2A, DAVIDSON HIGHLINE SUBDIVISION REPLAT;
THENCE N 89°58'37" E, 73.79 FEET ALONG THE SOUTH LINE OF SAID LOT 2A, DAVIDSON HIGHLINE SUBDIVISION REPLAT TO THE SOUTHWEST CORNER OF TRACT Q, TAKODA SUBDIVISION;
THENCE N 89°59'23" E, 40.09 FEET ALONG THE SOUTH LINE OF SAID TRACT Q TO THE NORTHWEST CORNER OF THAT TRACT OF LAND RECORDED JUNE 28, 1971 AT RECEPTION NO. 980789, BOULDER COUNTY RECORDS;
THENCE S 00°03'59" W ALONG THE WEST LINE OF SAID TRACT, 846.37 FEET TO THE SOUTHWEST CORNER OF SAID TRACT AND A POINT ON THE NORTH LINE OF CHRISTOPHER VILLAGE FILING 4 SUBDIVISION;
THENCE S 55°08'59" W ALONG SAID NORTH LINE OF CHRISTOPHER VILLAGE FILING 4 SUBDIVISION, 106.40 FEET;
THENCE N 89°47'15" W ALONG SAID NORTH LINE OF CHRISTOPHER VILLAGE FILING 4 SUBDIVISION, 195.75 FEET TO THE NORTHWEST CORNER OF SAID CHRISTOPHER VILLAGE FILING 4 SUBDIVISION;
THENCE S 24°00'00" E ALONG THE WEST LINE OF SAID CHRISTOPHER VILLAGE FILING 4 SUBDIVISION, 432.21 FEET TO THE SOUTHWEST CORNER OF SAID CHRISTOPHER VILLAGE FILING 4 SUBDIVISION AND A POINT ON THE NORTHERLY RIGHT-OF-WAY OF SOUTH BOULDER ROAD;
THENCE N 89°51'42" W ALONG SAID NORTHERLY RIGHT-OF-WAY OF SOUTH BOULDER ROAD, 190.98 FEET TO A POINT ON THE EAST LINE OF THE COLORADO AND SOUTHERN RAILROAD RIGHT OF WAY;
THENCE ALONG SAID EAST RIGHT OF WAY LINE ALONG A CURVE TO THE LEFT WITH A RADIUS OF 2034.80 FEET, A LENGTH OF 701.21 FEET AND THE CHORD BEARS N 24°38'30" W, 697.75 FEET;
THENCE N 31°36'45" W ALONG SAID EAST RIGHT OF WAY LINE, 701.49 FEET TO THE SOUTHWEST CORNER OF SAID OUTLOT B, THE POINT OF BEGINNING.

COUNTY OF BOULDER, STATE OF COLORADO

AREA = 17.32 ACRES

STEEL RANCH SOUTH RENDERING

VICINITY MAP

SCALE: 1" = 2000'

DEDICATION SUMMARY

OUTLOT/TRACT	UNENCUMBERED AREA (ACRES)	ENCUMBERED AREA (ACRES)	TOTAL AREA (ACRES)	OWNERSHIP	PRIMARY USES	MAINTENANCE
OUTLOT						
1	0.34[1]	0.20	0.54	Louisville	Pedestrian Trail, Drainage, Utility Easement, Irrigation Ditch & Landscape	City of Louisville
2	0.03	-	0.03	Louisville	Landscape Island in Pubic ROW and Water Quality	Steel Ranch South H.O.A.
3	0.05[1]	0.56	0.61	Louisville	Pedestrian Trail, Drainage, Utility Easement Irrigation Ditch, Maintenance Access, Secondary Emergency Access & Landscape	City of Louisville
4	0.01	-	0.01	Louisville	Landscape Island in Pubic ROW	Steel Ranch South H.O.A.
5	0.01	-	0.01	Louisville	Landscape Island in Pubic ROW and Water Quality	Steel Ranch South H.O.A.
TOTALS	0.44 AC.	0.76 AC.	1.20 AC.			
TRACT						
A	-	0.09	0.09	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
B	-	0.14	0.14	H.O.A.	Water Quality, Detention, Irrigation Ditch, Proposed Utility Easement, Signage & Landscape	Steel Ranch South H.O.A.
C	0.06	0.09	0.15	H.O.A.	Utility Easement & Landscape	Steel Ranch South H.O.A.
D	-	0.09	0.09	H.O.A.	Private & Emergency Access & Utility Easement	Steel Ranch South H.O.A.
E	0.10	0.14	0.24	H.O.A.	Existing & Proposed Utility Easement & Landscape	Steel Ranch South H.O.A.
F	-	0.16	0.16	H.O.A.	Water Quality, Detention, Landscape & Monument Sign, Pedestrian Trail	Steel Ranch South H.O.A.
G	0.71	0.34	1.05	H.O.A.	Monument Sign, Existing & Proposed Utility Easement & Landscape	Steel Ranch South H.O.A.
H	0.14	-	0.14	H.O.A.	Landscaping	Steel Ranch South H.O.A.
I	0.02	0.01	0.03	H.O.A.	Water Quality, Proposed Utility Easement, Signage & Landscape	Steel Ranch South H.O.A.
J	0.20	-	0.20	H.O.A.	Landscaping	Steel Ranch South H.O.A.
K	0.12	0.16	0.28	H.O.A.	Existing and Proposed Utility Easement, Landscape, Parking & Monument Sign	Steel Ranch South H.O.A.
L	-	0.70	0.70	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
M	-	0.05	0.05	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
N	-	0.05	0.05	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
O	-	0.07	0.07	H.O.A.	Private & Emergency Access & Proposed Utility Easement	Steel Ranch South H.O.A.
TOTALS	1.24 AC.	2.19 AC.	3.44 AC.			

NOTE: EXISTING ENCUMBRANCES AND USES ARE NOTED ON THE DRAWINGS AND ARE NOT SUPERSEDED BY THE OWNERSHIP / USE TABLE.

[1] INCLUDES POTENTIAL REGIONAL TRAIL, BY OTHERS, WITHIN UNENCUMBERED AREA

PREVIOUSLY PLATTED CITY OF LOUISVILLE OWNED PROPERTY

OUTLOT/TRACT	UNENCUMBERED AREA (ACRES)	ENCUMBERED AREA (ACRES)	TOTAL AREA (ACRES)	OWNERSHIP	USE	MAINTENANCE
OUTLOT B	0.01	0.19	0.20	Louisville	Pedestrian Trail, Utility Easement & Landscape	City of Louisville
HECLA R.O.W.	0.00	0.66	0.66	Louisville	Public Right of Way	City of Louisville

PROJECT DESCRIPTION

GROSS PROPERTY AREA:	±17.32 AC.
CURRENT ZONING:	PCZD-R, PCZD-C AND PCZD-C/R PCZD-R: ±14.92 AC. PCZD-C: ±0.91 AC. PCZD-C/R: ±1.00 AC. CITY OF LOUISVILLE: ±0.48 AC.
PROPOSED ZONING:	PLANNED COMMUNITY ZONED DISTRICT (CITY OF LOUISVILLE) PA 4A PCZD-R: ±7.30 AC. PA 4A PCZD-C: ±0.91 AC. PA 4B PCZD-R: ±8.63 AC. CITY OF LOUISVILLE: ±0.48 AC.
MAX. NUMBER OF APPROVED RESIDENTIAL UNITS:	306 D.U.
ACCESS:	HECLA DRIVE (VIA TAKODA, AKA STEEL RANCH), SOUTH BOULDER ROAD (VIA STEEL STREET)

NOTES

1. SURVEY BY RMCS SURVEYING, DATED MARCH 31, 2011.
2. PROPOSED VEHICULAR CONNECTIONS SHOWN AS ARROWS MAY BE REFINED, WITH FUTURE CONSTRUCTION PLAN SUBMITTALS.
3. TIMING AND PHASING OF DEVELOPMENT SHALL BE DEPENDENT UPON MARKET CONDITIONS AND LOCATION OF UTILITIES.

Sheet Index

CITY COUNCIL SIGNATURE BLOCK

APPROVED THIS ____ DAY OF __________ 201__ BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO.

______________________ ______________________
MAYOR CITY CLERK

PLANNING COMMISSION CERTIFICATION

RECOMMENDED APPROVAL THIS ____ DAY OF __________, 201__ BY THE PLANNING COMMISSION OF THE CITY OF LOUISVILLE, COLORADO. RESOLUTION NO. __________ SERIES __________

____
CHAIRMAN

CLERK & RECORDER CERTIFICATE – COUNTY OF BOULDER, STATE OF COLORADO

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED IN MY OFFICE AT _____ O'CLOCK, ___M., THIS _____ DAY OF __________ OF 201____ AND IS RECORDED IN PLAN FILE __________ FEE __________ PAID __________ FILM NO. __________ RECEPTION

______________________ ______________________
RECORDER DEPUTY

OWNERSHIP SIGNATURE BLOCK

BY SIGNING THIS PDP/PUD, THE OWNER ACKNOWLEDGES AND ACCEPTS ALL THE REQUIREMENTS AND INTENT SET FORTH BY THIS PDP/PUD. WITNESS OUR HANDS AND SEALS THIS ____ DAY OF __________ 201__

______________________ (NOTARY SEAL)
OWNER – RMCS LLC, A COLORADO LIMITED LIABILITY COMPANY, A/K/A RMCS LLC, A COLORADO LIMITED LIABILITY COMPANY

____
NOTARY

______________________ (NOTARY SEAL)
OWNER

____
NOTARY

LANDSCAPE ARCHITECTURE
GROW STUDIO LLC
154 S. 35TH STREET
BOULDER, CO 80305
303.963.5452
CONTACT
Tom Rogers

ARCHITECTURE & PLANNING
HARTRONFT ASSOCIATES
CONTACT
Erik Hartronft, AIA

RMCS, LLC
950 Spruce Street, Suite 2A
Louisville, CO 80027
Tel: (303) 475-2106
Contact: Justin McClure

ENGINEERING CONSULTANTS
Contact: Jason D. Margraf, PE

STEEL RANCH SOUTH PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

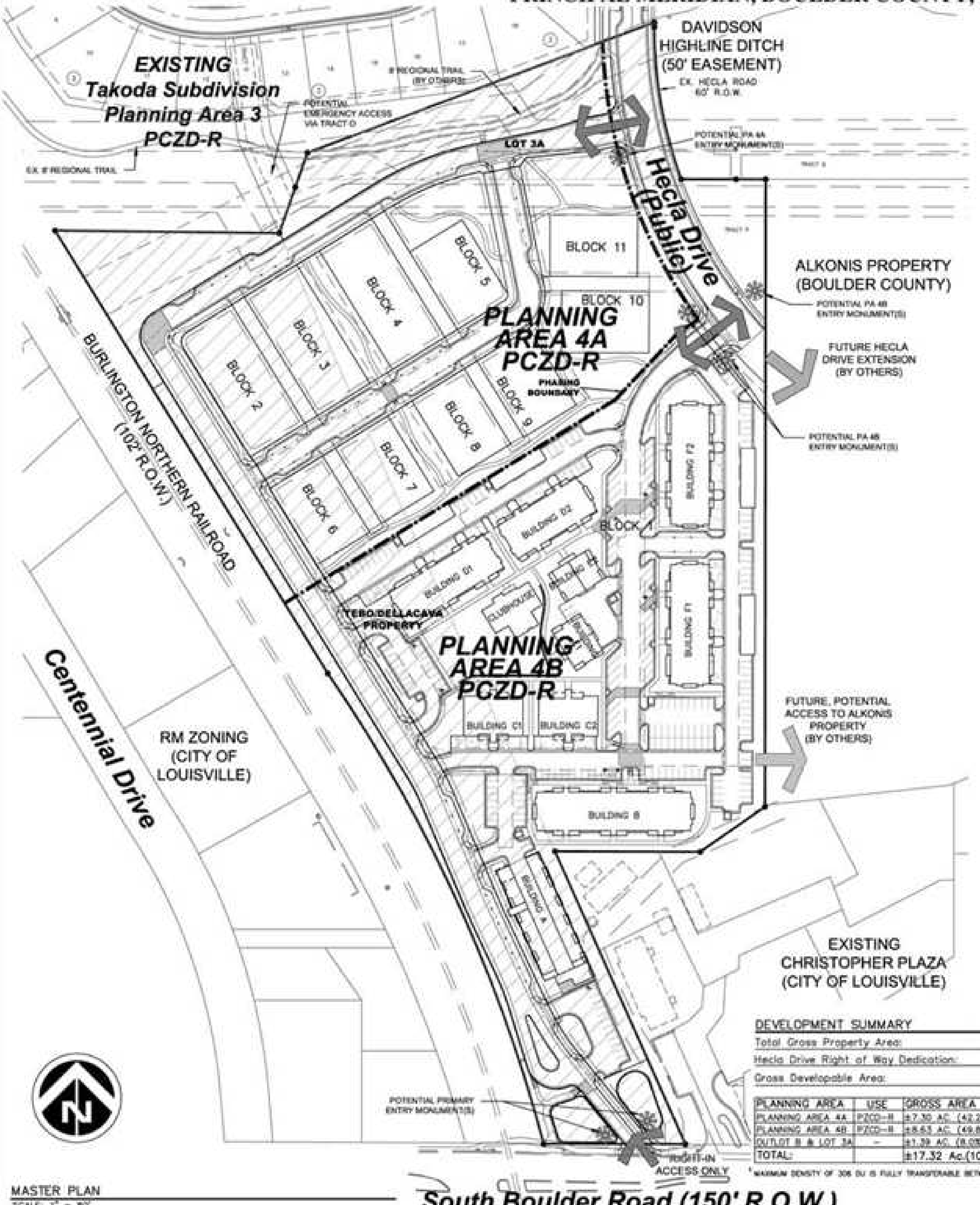
COVER SHEET

DOCUMENT AMENDMENTS

No.	Date	Description
3	11/21/11	1st UPDATE TO CITY COMMENTS
2	10/21/11	PLAN AMENDMENT 1
1	10/10/11	ORIGINAL DATE OF PLAN PREPARATION

Project Number: 03000531
Designed By: SCD
Drawn By: ACE
Checked By: JDM
Sheet Number: 1 of 18

STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT
SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



GENERAL NOTES AND STANDARDS – ALL PLANNING AREAS

1. TWO DISTINCT PLANNING AREAS ARE PROPOSED WITHIN STEEL RANCH SOUTH. THESE ARE AS FOLLOWS:
   PLANNING AREA 4A: PZCD-R
   PLANNING AREA 4B: PZCD-R
2. ALL PUBLIC USE DEDICATIONS HAVE PREVIOUSLY BEEN MET FOR THE RMCS AND LOT 3A PROPERTIES. THE REQUIRED PUBLIC LAND DEDICATION IS 15% OF THE GROSS LAND AREA FOR THE DELLACAVA TEBO PARCEL.
3. PROPOSED PUBLICLY DEDICATED PEDESTRIAN AND BICYCLE TRAILS ARE INTENDED TO ASSIST IN THE CONNECTION OF STEEL RANCH SOUTH TO THE LOUISVILLE TRAIL SYSTEM, DOWNTOWN LOUISVILLE, AS WELL AS CONNECTING TO NEIGHBORING STEEL RANCH AND NORTHEND. THE MULTI MODEL CORRIDOR PROVIDED BY STEEL STREET ROW ESTABLISHES THE NORTH–SOUTH CONNECTIVITY THAT HAS BEEN ENVISIONED FOR THIS AREA OF NORTHEAST LOUISVILLE.
4. PUBLIC USE DEDICATED LAND, AS DEPICTED ON SUBSEQUENT SHEETS, SHALL BE IMPROVED, OWNED, AND MAINTAINED BY THE CITY OF LOUISVILLE. ALL TRACTS, AS DEPICTED ON SHEETS 1 AND 3, SHALL BE MAINTAINED BY THE HOA. THE DEVELOPER MAY CONDUCT ACTIVITIES (INCLUDING BUT NOT LIMITED TO GRADING) ON ALL DEDICATED LANDS FOR THE PURPOSE OF CONSTRUCTING PUBLIC AND PRIVATE IMPROVEMENTS REFERRED TO IN THIS PRELIMINARY DEVELOPMENT PROPOSAL.
5. ENTRY MONUMENTS ARE CONCEPTUAL IN NATURE AT THE LOCATIONS SHOWN ON THIS PLAN. FINAL LOCATION SHALL BE DETERMINED DURING CONSTRUCTION DOCUMENTATION PROCESS.
6. NO HISTORIC STRUCTURES EXIST ON THE PROPERTY. ALL EXISTING STRUCTURES AND SURFACE ENCUMBRANCES MAY BE REMOVED.
7. THE CITY OF LOUISVILLE SHALL PAY THE WATER TAP FEES FOR PUBLICLY DEDICATED LAND.
8. ALL TRAILS SHALL MEET ADA STANDARDS FOR RUNNING SLOPE AND CROSS SLOPE.
9. IN ADDITION TO ALL USES ALLOWED BY THE PCZD–R DESIGNATION, THE FOLLOWING USES SHALL BE EXPRESSLY ALLOWED WITHIN PA4A AND PA4B: POOL AND COMMUNITY RECREATIONAL FACILITIES, ACCESSORY STRUCTURES AND FREE STANDING GARAGES AND PARKING STRUCTURES, AND SHALL MEET ALL OTHERS DIMENSIONAL STANDARDS.
10. AMENITY/RECREATION STRUCTURES ARE ACCESSORY STRUCTURES, AND ARE NOT INCLUDED IN DENSITY CALCULATIONS, HOWEVER ARE INCLUDED IN LOT COVERAGE CALCULATIONS. SUCH STRUCTURES ARE SUBJECT TO BULK AND DIMENSION STANDARDS SPECIFIED FOR ACCESSORY STRUCTURES AS DESCRIBED IN THIS PUD IN ADDITION TO OTHER DIMENSIONAL STANDARDS WITHIN THIS PUD.
11. PARKING STRUCTURES, AND PARKING GARAGES, WHETHER ATTACHED TO DWELLING UNITS OR DETACHED, SHALL BE APPROVED AS ACCESSORY STRUCTURES AND USES NECESSARY AND CUSTOMARILY INCIDENTAL TO THE RESIDENTIAL USE, SUBJECT TO BULK AND DIMENSION STANDARDS AS DESCRIBED IN THIS PUD. PARKING STRUCTURES, GARAGES AND SIMILAR STRUCTURES ARE NOT INCLUDED IN DENSITY CALCULATIONS, HOWEVER ARE INCLUDED IN LOT COVERAGE CALCULATIONS. SPECIFIC DESIGN SUBJECT TO FINAL PUD APPROVAL.
12. THE ILLUSTRATIONS AND ANNOTATIONS WITHIN THIS PUD SUPERCEDE ALL PREVIOUS ENTITLEMENT DOCUMENTS IN THE EVENT OF A CONFLICT.
13. BUILDING PERMITS SHALL BE MADE AVAILABLE TO PA4B TO ECONOMICALLY ACCOMMODATE UP TO 240 UNITS AS MARKET CONDITIONS WARRANT.
14. CITY COUNCIL AT ITS OPTION MAY REQUEST CASH IN LIEU OF PUBLIC USE DEDICATION TO BE DETERMINED AT THE TIME OF FINAL PLAT APPROVAL.
15. THE BULK AND DIMENSION STANDARDS FOR ALL PLANNING AREAS BELOW ARE DEFAULT VALUES PER GDP APPROVALS. SITE SPECIFIC BULK AND DIMENSION STANDARDS ON SHEET 4 FOR PLANNING AREA 4A, AND SHEET 5 FOR PLANNING AREA 4B SHALL GOVERN DEVELOPMENT OF THOSE AREAS.
16. NO RESTRICTIONS ARE IMPOSED WITH REGARD TO PROJECT PHASING OTHER THAN AS EXPRESSLY SET FORTH IN THIS DEVELOPMENT PLAN OR IN ANY DEVELOPMENT AGREEMENT BETWEEN THE OWNER AND THE CITY.
17. ENTRY MONUMENTS ARE CONCEPTUAL IN NATURE AT THE LOCATIONS SHOWN ON THIS PLAN. FINAL LOCATION SHALL BE DETERMINED DURING CONSTRUCTION DOCUMENTATION PROCESS.

BULK & DIMENSION STANDARDS PER APPROVED PER GDP 1ST AMENDMENT TO TAKODA PER ORDINANCE 1601 SERIES 2011:

	PLANNING AREA 1 [1]	PLANNING AREA 2	PLANNING AREA 3		PLANNING AREA 4 [5]
			BLOCKS 1, 2, 3, 5 & BLOCK 4 LOTS 16-21, BLOCK 5 LOTS 16-25	BLOCK 4 LOTS 1-15 & BLOCK 5 LOTS 1-15	
MIN. LOT AREA	5,000 S.F.	3,000 S.F.	6,500 S.F.	3,000 S.F.	MF N/A SFA: 1,000 S.F.
MIN. LOT WIDTH	N/A	30'	35'	30'	15'
MAX. LOT COVERAGE	.30 FAR	60%	50%	60%	85%
BUILDING SETBACKS					
MIN. FRONT YARD SETBACK (PRINCIPAL USES)	N/A	10' (R.O.W.), 5' (PARK/O.S.)	20' (WALK TO CAR), 15' (OTHER)	10' (R.O.W.), 5' (PARK/O.S.)	5' (ALL CONDITIONS)
MIN. SIDE YARD SETBACK [1] (PRINCIPAL USES)	N/A	5' (INT. LOT/ALLEY/PARK), 10' (R.O.W.)	5' (INT. LOT), 10' (R.O.W.)	5' (INT. LOT/ALLEY/PARK), 10' (R.O.W.)	0' (IN BLDG.), 5' (ALL OTHER CONDITIONS)
MIN. SIDE YARD SETBACK (ACCESSORY USES) [3]	N/A	5' (INT. LOT/ALLEY/PARK), 10' (R.O.W.)		5' (INT. LOT/ALLEY/PARK), 10' (R.O.W.)	N/A
MIN. REAR YARD SETBACK (PRINCIPAL USES)	N/A	5' (ALLEY)	15' [2]	5' (ALLEY)	4' (TO ALLEY)
MIN. REAR YARD SETBACK (ACCESSORY USES) [3]	N/A	5' (ALLEY)		5' (ALLEY)	N/A
SETBACK FROM HWY. 42 R.O.W.	PARKING: 20' BUILDING: 10'	N/A	N/A	N/A	N/A
SETBACK FROM COLLECTOR STREET R.O.W.	PARKING: 10' BUILDING: 10'	N/A	N/A	N/A	N/A
SETBACK FROM LOCAL STREET R.O.W.	PARKING: 5' BUILDING: 10'	N/A	N/A	N/A	N/A
SETBACK FROM PARKS & OPEN SPACE	PARKING: 5' BUILDING: 5'	N/A	N/A	N/A	N/A
MINIMUM BLDG. SEPARATION	10'	10'	10'	10'	10'
MAX. BLDG. HEIGHT					
PRINCIPAL USES	40'	40'	35'	35'	MF: 55' SFA 35'
ACCESSORY USES [3]	N/A	25'		25'	N/A

[1] IF FEE SIMPLE LOTS ARE CREATED WITHIN BUILDINGS, THERE IS NO SETBACK REQUIREMENT BETWEEN INTERNAL UNITS.
[2] UP TO 50% OF REAR ELEVATION MAY ENCROACH 5' INTO REAR SETBACK. DECKS MAY ENCROACH 10' INTO REAR SETBACK.
[3] ACCESSORY STRUCTURES AVAILABLE FOR SFD ALLEY LOADED TYPES ONLY. STRUCTURES SHALL NOT INCLUDE KITCHEN USE AREA(S).
[4] COMMERCIAL DESIGN STANDARDS WILL BE SUBMITTED IN CONJUNCTION WITH THE SUBMITTAL OF THE FINAL DEVELOPMENT PLAN.
[5] ALL PLANNING AREA BULK AND DIMENSION STANDARDS ARE APPLICABLE TO PA4

DEVELOPMENT SUMMARY

Total Gross Property Area:	17.32 AC
Hecla Drive Right of Way Dedication:	0.66 AC
Gross Developable Area:	16.66 AC.

PLANNING AREA	USE	GROSS AREA	UNITS*	DENSITY*
PLANNING AREA 4A	PZCD–R	±7.30 AC. (42.2%)	85 D.U. (86 MAX.)	8.90 D.U. / AC.
PLANNING AREA 4B	PZCD–R	±8.63 AC. (49.8%)	220 D.U. (240 MAX.)	27.81 D.U. / AC.
OUTLOT B & LOT 3A	–	±1.39 AC. (8.0%)	–	–
TOTAL:		±17.32 Ac.(100.0%)	305 D.U.	

* MAXIMUM DENSITY OF 306 DU IS FULLY TRANSFERABLE BETWEEN PA 4A AND PA 4B.

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STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

MASTER PLAN AND GENERAL NOTES

No.	Date	Description
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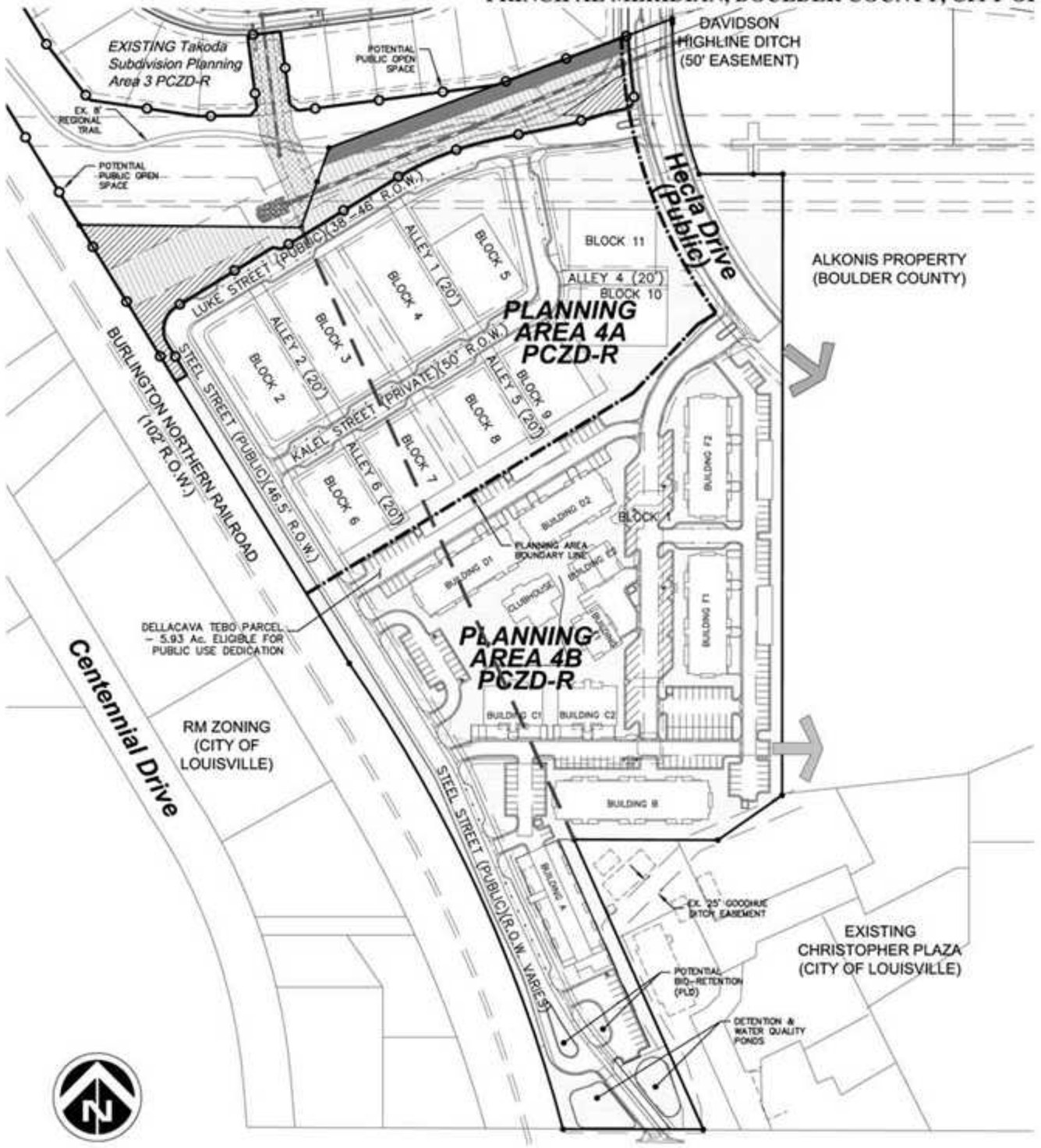
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOUNDER COUNTY, CITY OF LOUISVILLE, COLORADO



PUBLIC LANDS DEDICATION PLAN
SCALE: 1" = 80'

PUBLIC LANDS & PRIVATE COMMON OPEN AREA SUMMARY

LAND TYPE	OWNED & MAINTAINED BY:	AREA			
		PLANNING AREA 4A	PLANNING AREA 4B	TRACT O	TOTAL AREA
UNENCUMBERED DEDICATED LAND	CITY OF LOUISVILLE	±0.31 Ac.	-	-	±0.31 Ac. (5.34%)
ENCUMBERED[1] DEDICATED LAND	CITY OF LOUISVILLE	±0.84 Ac.	-	-	±0.84 Ac. (14.46%)
PRIVATE COMMON OPEN AREA[2]	HOA	±1.56 Ac.	±2.85 Ac.	-	±4.41 Ac. (75.90%)
TRACT O	CITY OF LOUISVILLE	-	-	±0.25	±0.25 Ac. (4.30%)
Total:		±2.71 Ac.	±2.85	±0.25	±5.81 Ac. (100.0%)

[1] INCLUDES EASEMENTS IN PUBLIC LAND DEDICATIONS.
[2] INCLUDES DETENTION PONDS AND EASEMENTS IN PRIVATE OPEN AREAS.

PA 4A PUBLIC LAND DEDICATION REQUIREMENT[1]	
PA 4A GROSS AREA:	±8.09 AC.
DELLACAVA TEBO PARCEL AREA WITHIN PA 4A	±2.70 AC.
STEEL STREET & LUKE STREET ROW	±0.64 AC.
NET LAND AREA	±2.06 AC.
MINIMUM AREA REQUIREMENT:	15%
TOTAL DEDICATED UNENCUMBERED PUBLIC LAND REQUIRED:	±0.31 Ac.
PA 4B PUBLIC LAND DEDICATION REQUIREMENT[1]	
PA 4B GROSS AREA:	±8.63 AC.
DELLACAVA TEBO PARCEL AREA WITHIN PA 4B	±3.23 AC.
STEEL STREET ROW	±0.93 AC.
NET LAND AREA	±2.30 AC.
MINIMUM AREA REQUIREMENT:	15%
TOTAL DEDICATED UNENCUMBERED PUBLIC LAND REQUIRED:	±0.34 Ac.
TOTAL DEDICATED UNENCUMBERED PUBLIC LAND REQUIRED:	±0.65 Ac.
TOTAL DEDICATED PUBLIC LAND PROVIDED:	±1.40 Ac.

PUBLIC LAND PROVISION[2]

LAND TYPE	AREA
NON-ENCUMBERED PUBLIC LAND DEDICATION:	±0.31 Ac.[2]
ENCUMBERED PUBLIC LAND DEDICATION:	±0.84 Ac.
TRACT O	±0.25 Ac.
TOTAL DEDICATED PUBLIC LANDS:	±1.40 Ac.
	(6.41% OF TOTAL SITE AREA)
	(8.66% OF GROSS DEVELOPABLE AREA)

[1] DEDICATION REQUIREMENTS ARE BASED ON ACQUISITION OF TEBO PARCEL (5.93 Ac.) ONLY. ALL PUBLIC USE DEDICATIONS HAVE PREVIOUSLY BEEN MET FOR LOT 1, BLOCK 10 OF THE TAKODA SUBDIVISION AND LOT 3A OF THE DAVIDSON HIGHLINE SUBDIVISION REPLAT.

[2] THIS PUD PROVIDES .31 ACRES OF UNENCUMBERED LAND AND 0.84 ACRES OF ENCUMBERED LAND AND 0.25 ACRES OF TRACT O (POTENTIALLY) TOTALING 1.40 ACRES. THIS DEDICATION IS IN EXCESS OF THE REQUIRED .65 ACRES. THUS, THE LAND DEDICATION WITHIN THIS PUD SATISFIES THE LAND DEDICATION REQUIREMENTS FOR THE DELLACAVA TEBO PARCEL. DUE TO THE EXCESS DEDICATION, THE CITY OF LOUISVILLE WILL FUND ALL IMPROVEMENTS ON THE PUBLICLY DEDICATED LANDS.

DEDICATION LEGEND

	AREA
UNENCUMBERED PUBLIC LAND DEDICATION	±0.31 Ac.
ENCUMBERED PUBLIC LAND DEDICATION	±0.84 Ac.
PRIVATE COMMON OPEN AREA	±4.41 Ac.
"OUTLOT B" (CITY OWNED)	±0.20 Ac.
TRACT O (POTENTIAL DEDICATION)	±0.25 Ac.

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STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

PUBLIC LAND DEDICATION PLAN

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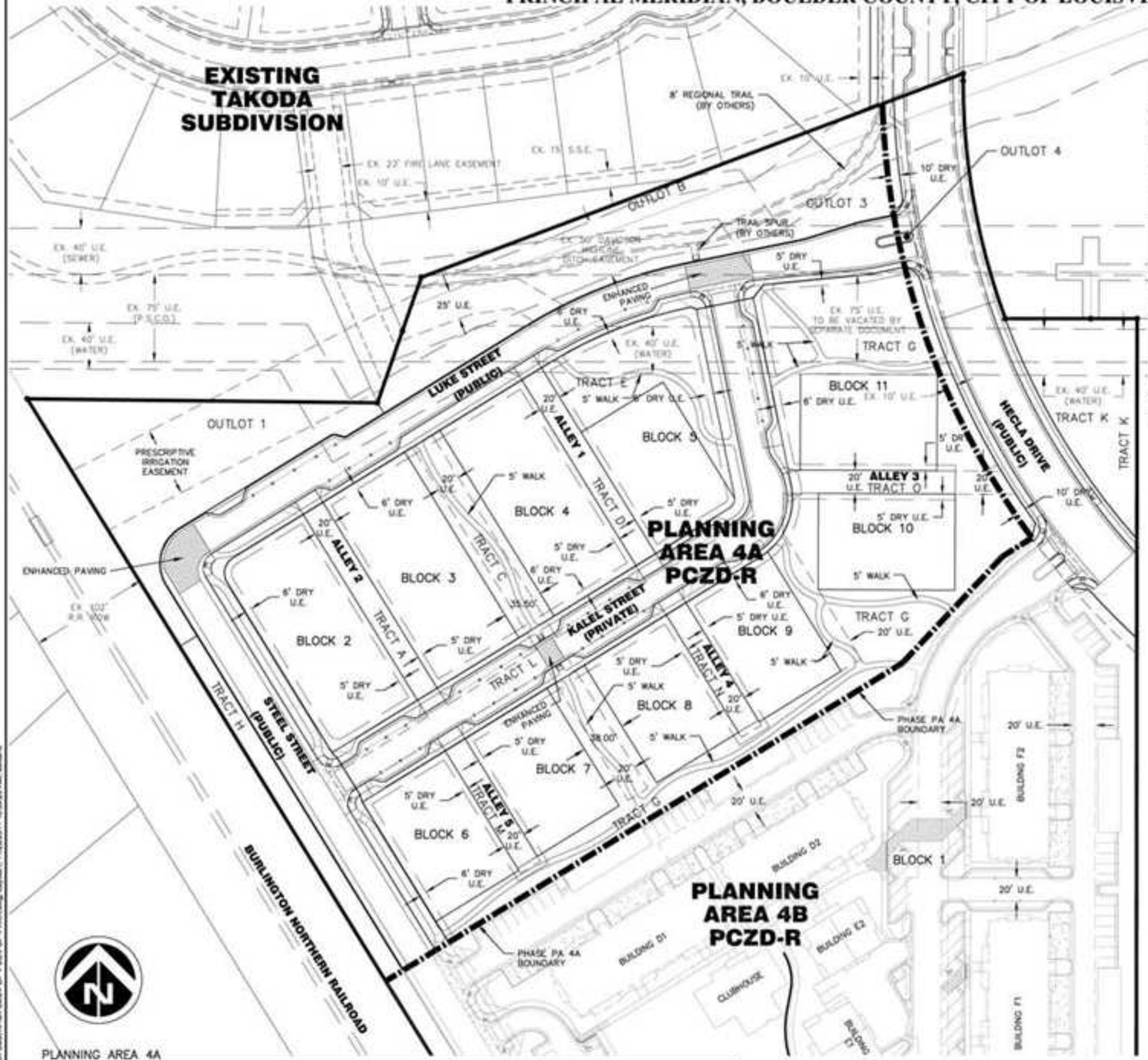
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

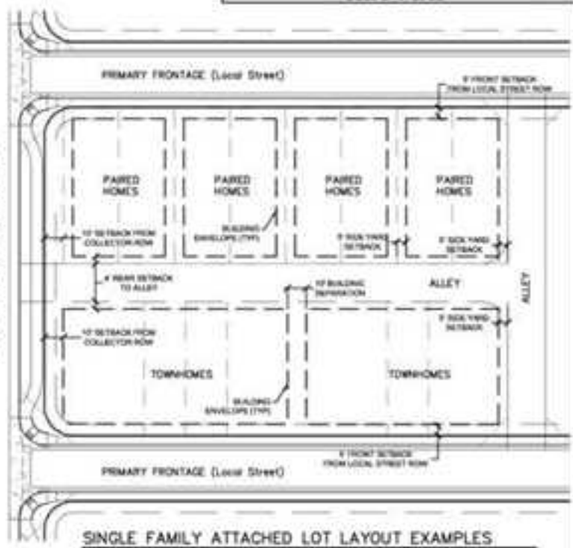
SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



PLANNING AREA 4A
SCALE: 1" = 50'

SINGLE FAMILY ATTACHED LOT LAYOUT EXAMPLES
N.T.S.

KEY MAP NTS



SINGLE FAMILY ATTACHED LOT LAYOUT EXAMPLES
SCALE: 1" = 40'

PLANNING AREA 4A DEVELOPMENT SUMMARY

LAND USE:	PCZD-R & CITY OF LOUISVILLE
GROSS LAND AREA:	±8.69 Ac.
MAX. SINGLE FAMILY DWELLING UNITS (BASED UPON ACTUAL TRACT SIZE):	90 DU[2]
MAX. GROSS DENSITY	30 DU/Ac
MAX. LOT COVERAGE	85%
RESIDENTIAL AREA[1]	±7.30 Ac (84.0%)
MAXIMUM BUILDING HEIGHT:	35' SFA

[1] NOT INCLUDING OUTLOT B & LOT 3A.
[2] MAXIMUM DENSITY OF 30/8 DU FULLY TRANSFERABLE BETWEEN PA 4A AND PA 4B. PLANNING AREA 4A SHALL NOT EXCEED SFA OF 90 UNITS.

BULK & DIMENSION STANDARDS (MAIN STRUCTURES)

	PLANNING AREA 4A
MIN. LOT AREA	MF: N/A SFA: 1,000 S.F.
MIN. LOT WIDTH	16'
MAX. LOT COVERAGE	85%
	BUILDING SETBACKS
MIN. FRONT YARD SETBACK[4] (PRINCIPAL USES)	5' ALL CONDITIONS
MIN. SIDE YARD SETBACK[1,4] (PRINCIPAL USES)	0' (IN BLDG.), 5' ALL OTHER CONDITIONS
MIN. REAR YARD SETBACK[2,4] (PRINCIPAL USES)	4' (TO ALLEY)
SETBACK FROM HWY. 42 R.O.W.	N/A
SETBACK FROM COLLECTOR STREET R.O.W.	PARKING: 15' BUILDING: 10'
SETBACK FROM LOCAL STREET R.O.W.	PARKING: 5' BUILDING: 5'
SETBACK FROM PARKS & OPEN SPACE	PARKING: 0' BUILDING: 0'
MINIMUM BLDG. SEPARATION[3]	10'
	MAX. BLDG. HEIGHT
PRINCIPAL USES	SFA: 35'

[1] IF FEE SIMPLE LOTS ARE CREATED WITHIN BUILDINGS, THERE IS NO SETBACK REQUIREMENT BETWEEN INTERNAL UNITS.
[2] UP TO 30% OF REAR ELEVATION MAY ENCROACH 5' INTO REAR SETBACK; DECKS OR PATIOS MAY ENCROACH 10' INTO REAR SETBACK.
[3] ACCESSORY USES BULK AND DIMENSION STANDARDS AS DEPICTED ON SHEET 5 APPLY TO PA 4A.
[4] ARCHITECTURAL PROJECTIONS MAY COMPLY WITH SECTION 17.6.050 OF THE LOUISVILLE MUNICIPAL CODE.

PLANNING AREA 4A NOTES AND STANDARDS

1. INTENT: PLANNING AREA 4A IS INTENDED TO BE ITS OWN NEIGHBORHOOD WITHIN STEEL RANCH SOUTH, AND ADD TO THE DIVERSITY OF HOUSING TYPES WITHIN THE COMMUNITY. SOME UNITS MAY INCORPORATE RANCH PLANS THAT CATER TO ADAPTABLE PRINCIPLES.
2. THE PLANNING AREA WILL BE ORGANIZED ARGUND 2 PRIMARY POINTS OF ACCESS KNOWN AS LUKE STREET AND STEEL STREET. KALEL STREET WILL SERVE THE INTERIOR OF THE PLANNING AREA TO THE SOUTH AND WILL INTERSECT WITH ALLEY 2. THIS SITE LAYOUT ENHANCES ACCESS TO COMMON OPEN AREAS, GREEN SPACES, AND MULTI-MODAL TRANSPORTATION OPPORTUNITIES.
3. A MAINTENANCE PLAN SHEET SHALL BE SUBMITTED WITH A FINAL PUD.
4. USES ALLOWED BY RIGHT: SINGLE FAMILY DETACHED AND SINGLE FAMILY ATTACHED UNITS AND ALL USES AS PERMITTED IN THE LOUISVILLE MUNICIPAL CODE SECTION 17.72.80 IN ADDITION TO THOSE NOTED ON THE COVER SHEET.
5. BUILDINGS MAY BE BUILT AT ONE, TWO, OR THREE STORY HEIGHTS, OR COMBINATIONS THEREOF.
6. ADDITIONAL CONDITIONS, COVENANTS AND RESTRICTIONS (CORs) TO BE DEVELOPED BY THE STEEL RANCH SOUTH H.O.A.
7. REFER TO DEDICATION SUMMARY TABLE ON SHEET 1 FOR TRACT / OUTLOT OWNERSHIP AND MAINTENANCE.
8. LANDSCAPE DESIGN: SEE SHEET 6 AND 7.
9. PARKING: 2.0 OFF-STREET PARKING SPACES ARE REQUIRED PER UNIT. ON-STREET GUEST PARKING IS PROVIDED ON ADJACENT STREETS.
10. REFER TO SHEET 3 FOR ALL DEDICATION INFORMATION.
11. SITE SPECIFIC BULK AND DIMENSION STANDARDS ON THIS SHEET FOR PLANNING AREA 4A SHALL GOVERN DEVELOPMENT OF THIS PLANNING AREA.

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STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT
PLANNING AREA 4A - PLAN, NOTES AND STANDARDS

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STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

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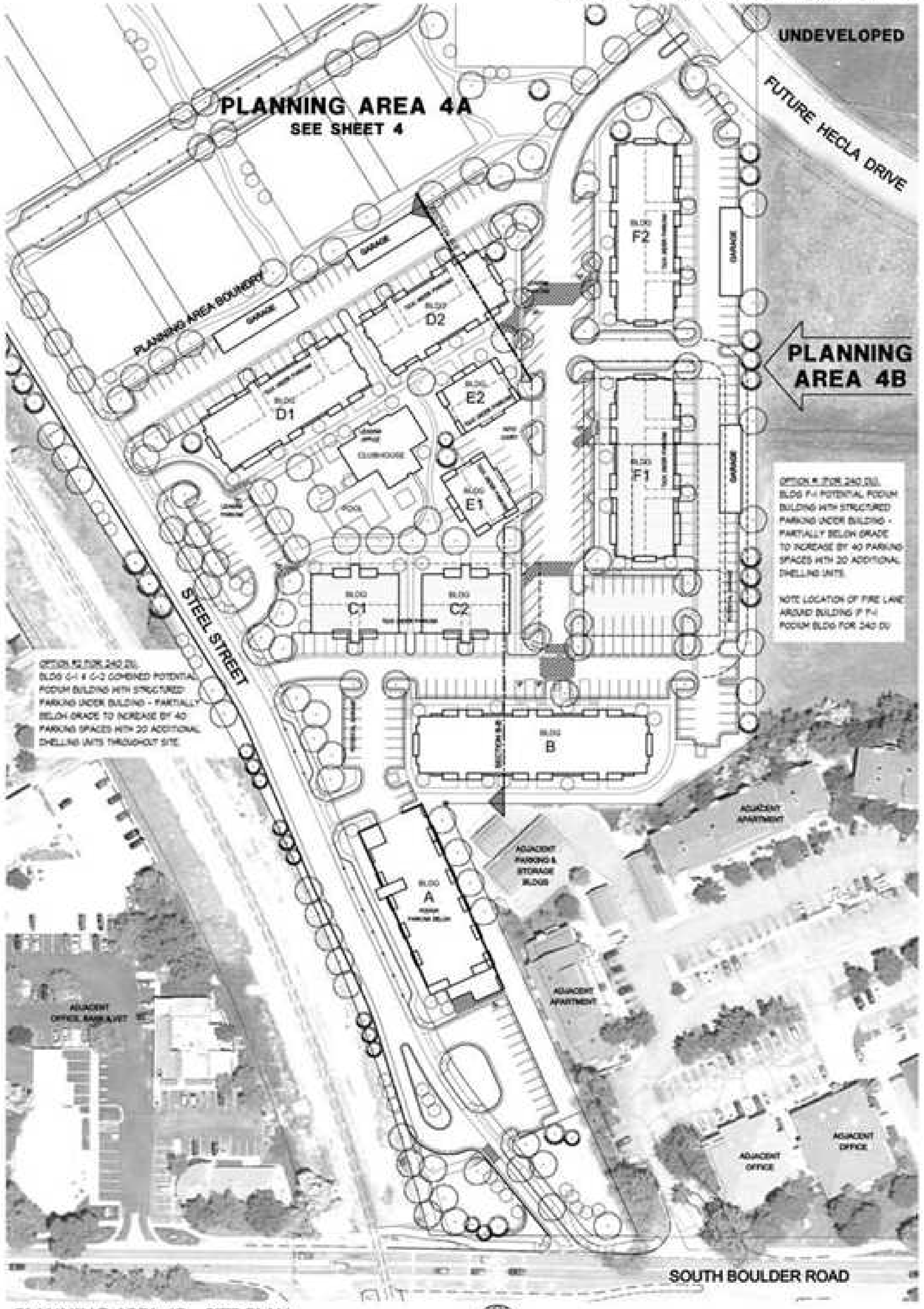
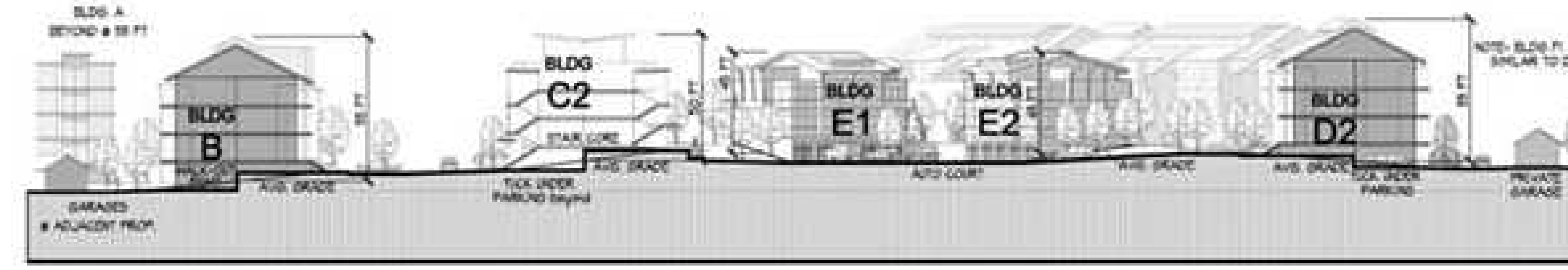


PLANNING AREA 4B - SITE PLAN

SCALE: 1" = 60'-0"



SITE SECTION B-B

PLANNING AREA 4B DEVELOPMENT SUMMARY

LAND USE	PCZD-R
NET LAND AREA	±8.63 Ac.
MAX. DWELLING UNITS (BASED UPON ACTUAL TRACT SIZE)	240 DU[2,3]
MAX. GROSS DENSITY	30 DU/Ac.
MAX. LOT COVERAGE	85%
RESIDENTIAL AREA[1]	±8.63 Ac (100.0%)
MAXIMUM BUILDING HEIGHT	55' MULTIFAMILY

[1]NOT INCLUDING HECLA ROW OR OUTLOT P
[2]MAXIMUM DENSITY OF 306 DU FULLY TRANSFERABLE BETWEEN PA 4A AND PA 4B
[3]DENSITY ANTICIPATED TO BE 220-240 DU DEPENDING ON FINAL DESIGN - SEE NOTES

BULK & DIMENSION STANDARDS (MULTIFAMILY)

	PLANNING AREA 4B
MIN. LOT AREA	NF [illegible]
MIN. LOT WIDTH	15'
MAX. LOT COVERAGE	85%
	BUILDING SETBACKS*
MIN. FRONT YARD SETBACK* (PRINCIPAL USES)	8' ALL CONDITIONS
MIN. SIDE YARD SETBACK* (PRINCIPAL USES)	5' ALL CONDITIONS
MIN. REAR YARD SETBACK** (PRINCIPAL USES)	4' (TO ALLEY)
SETBACK FROM COLLECTOR STREET R.O.W.	PARKING: 15' BUILDING: 10'
SETBACK FROM LOCAL STREET R.O.W.	PARKING: 5' BUILDING: 5'
MINIMUM BLDG. SEPARATION	10'
	MAX. BLDG. HEIGHT
PRINCIPAL USES	MF 55'

BULK & DIMENSION STANDARDS (ACCESSORY USES*)

	PLANNING AREA 4B
	BUILDING SETBACKS*
MIN. FRONT YARD SETBACK*	8' ALL CONDITIONS
MIN. SIDE YARD SETBACK*	0' (R.O.W.), 0' (INT. LOT LINE)
MIN. REAR YARD SETBACK*	0' (R.O.W.), 0' (INT. LOT LINE)
SETBACK FROM COLLECTOR STREET R.O.W.	10'
SETBACK FROM LOCAL STREET R.O.W.	0'
MINIMUM BLDG. SEPARATION	10'
	MAX. BLDG. HEIGHT
ACCESSORY USES	35'

*MF USES
**DECKS OR PATIOS MAY ENCROACH INTO REAR SETBACK
*ACCESSORY USES INCLUDE POOL AND COMMUNITY RECREATIONAL FACILITIES, ACCESSORY STRUCTURES AND FREE STANDING GARAGES AND PARKING STRUCTURES.
*ARCHITECTURAL FEATURES MAY ENCROACH INTO BUILDING SETBACKS PER LMC 17.16.[illegible]

STREET VIEW

SITE ENTRY FROM SOUTH BOULDER RD.

ARCHITECTURAL CHARACTER

Planning Area 4B – General Notes and Standards

1. Density: The maximum number of dwelling units permitted in PA-4A and PA-4B shall be 306 units total, and the maximum number of single family dwelling units in PA-4A shall be 90. Multi-Family Planning Area 4B shall accommodate up to 240 dwelling units, associated parking, open areas and amenities. Unit count may vary depending on final housing product design. Density of 220 dwelling units is achievable predominately with surface parking, and a minor amount of under-building (podium or tuck-under) parking as indicated on Site Plan. Provision for up to 240 DU on Planning Area 4B is achievable with additional under-building or structured parking within specified height and setback requirements. See Site Plan for potential alternatives for additional parking and dwelling unit density to achieve 240 DU in PA4B.

2. Parking Ratio and Parking Types: Multi-Family Planning Area 4B is intended to maintain a minimum overall parking ratio for residents, guests, and employees, of 1.70/DU, not including tandem parking spaces, with the overall ratio up to 2.0 including all types of parking within PA-4B. This area includes 4 primary types of parking in addition to limited on-street parking: a.) Surface Parking Lots; b.) Tuck-Under individual parking garages, (enclosed or unenclosed) provides 2 parking spaces in tandem, with one space in the apron of the garage. If tuck-under garages are enclosed, they can serve as secure storage areas for the residents; c.) Individual Garages within free-standing Garage Buildings, remote from the dwelling units; d) Under Building, or podium parking garage for multiple vehicles, integrated into the building architecture, may be partially below grade. Parking for persons with disabilities shall be provided as required by code at the time of building permit, and locations, quantities etc. as generally shown on this PUD are subject to change.

3. Site Circulation Concept: Multi-family Planning Area 4B is serviced by two major access points: from South Boulder Road and from Hecla Drive. The main circulation through Steel Ranch South is Steel Street on the west side of the development, which runs north past the multi-family housing in 4B to the townhomes in 4A, with primary east-west access into the multi family site just south of the central green. This connects to a north-south primary drive through the heart of the multi-family site with diagonal parking on each side. Major pedestrian areas are marked with decorative paving, at the southeast intersection of these two drives, and further north at the northeast entry to the central green, leasing office and clubhouse. A parking area on the west of the central green also serves the leasing office and clubhouse for functions.

4. Architectural Design Concept: Multi-Family Planning Area 4B is envisioned as a higher density housing product (30 DU/Acre +/-) to meet market demand for lower cost housing. To provide a unique sense of place and neighborhood feel for the residents of these larger buildings, it is intended that a variety of materials and architectural treatments are utilized for different buildings and zones within this part of the development. Building A at the southern panhandle of the site is envisioned as a podium design with under-building parking, elevator access and smaller units geared to a faster commuter lifestyle, singles and young couples. A separate resident's club room is located in the building for entertaining and resident gatherings. Building B is a transition building, geared to a similar demographic, but would also appeal to young families looking for smaller, affordable housing. The buildings on the green (C, D, E) are oriented to the main amenity space and have a broad appeal for singles, families, and empty nesters within a variety of unit sizes and features. All have "tuck under" parking as well as surface parking and access to private garages. Smaller buildings with larger units demand higher prices, and typically have more amenities. The buildings on the east side of the development (F) are standard and more affordable units. These also have tuck under parking and access to private garages.

5. The building configuration, design, parking layout, etc. as depicted herein is subject to further market analysis and design study, and as such may vary from the Final PUD to the Building Permit submittal. Such variations which are within 15% of the designs indicated herein shall be acceptable without a PUD amendment. Maximum densities and Bulk and Dimensional Standards shall be maintained.

6. Sustainability Goals: Multi-Family Planning Area 4B is proposed to incorporate several sustainability features into the building and site design. *(to be further described in Final PUD).*

7. Site specific Bulk and Dimension Standards on this sheet for Planning Area 4B shall govern development of this Planning Area.

UNIT COUNT & PARKING SUMMARY

BLDG	Description	Total DU	1BR	2BR	3BR	Parking Provided: Surface	Garage	Tandem Gar	Pkg Ratio (no tandem)	Pkg Ratio w/tandem	Parking at 2 per DU
A	Commuter Flats	36	22	14	0	28	30	0	1.72	NA	72
B	Young demographic	48	33	15	0	45	8	0	1.71	NA	96
	(potentially convert 16 surf to 16 garage spaces)										
C1+C2	Small Bldg-larger units	24	0	16	8	38	8	13	1.93	2.38	48
D1	Northwest standard	28	14	8	15	33	8	12	1.96	2.38	52
D2	Northwest standard	24	8	12	4	30	8	10	1.98	2.30	48
E1+E2	East on the green	8	3	4	4	8	5	9	1.63	2.25	16
F1	East Lot standard	27	12	3	12	33	8	13	1.52	2.00	54
F2	East Lot standard	27	12	3	12	33	8	13	1.52	2.00	54
	Clubhouse	0									
	Leasing & Common Pkg					12					
Total	(as shown on Site Plan)	220	96	76	44	237	70	80	1.67	1.97	440
						387 Total Pkg - surface + garages (not including tandem parking)				432 Total Pkg (incl tandem)	
Total Max DU for PA-4B		240				407 Total Pkg - surface + garages (not including tandem parking)				473 Total Pkg (incl tandem)	

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STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

PLANNING AREA 4B - PLANS, NOTES AND STANDARDS

No.	Date	Description
3	11/21/11	1ST UPDATE TO CITY COMMENTS
2	10/21/11	PLAN AMENDMENT 1
1	10/08/11	ORIGINAL DATE OF PLAN PREPARATION

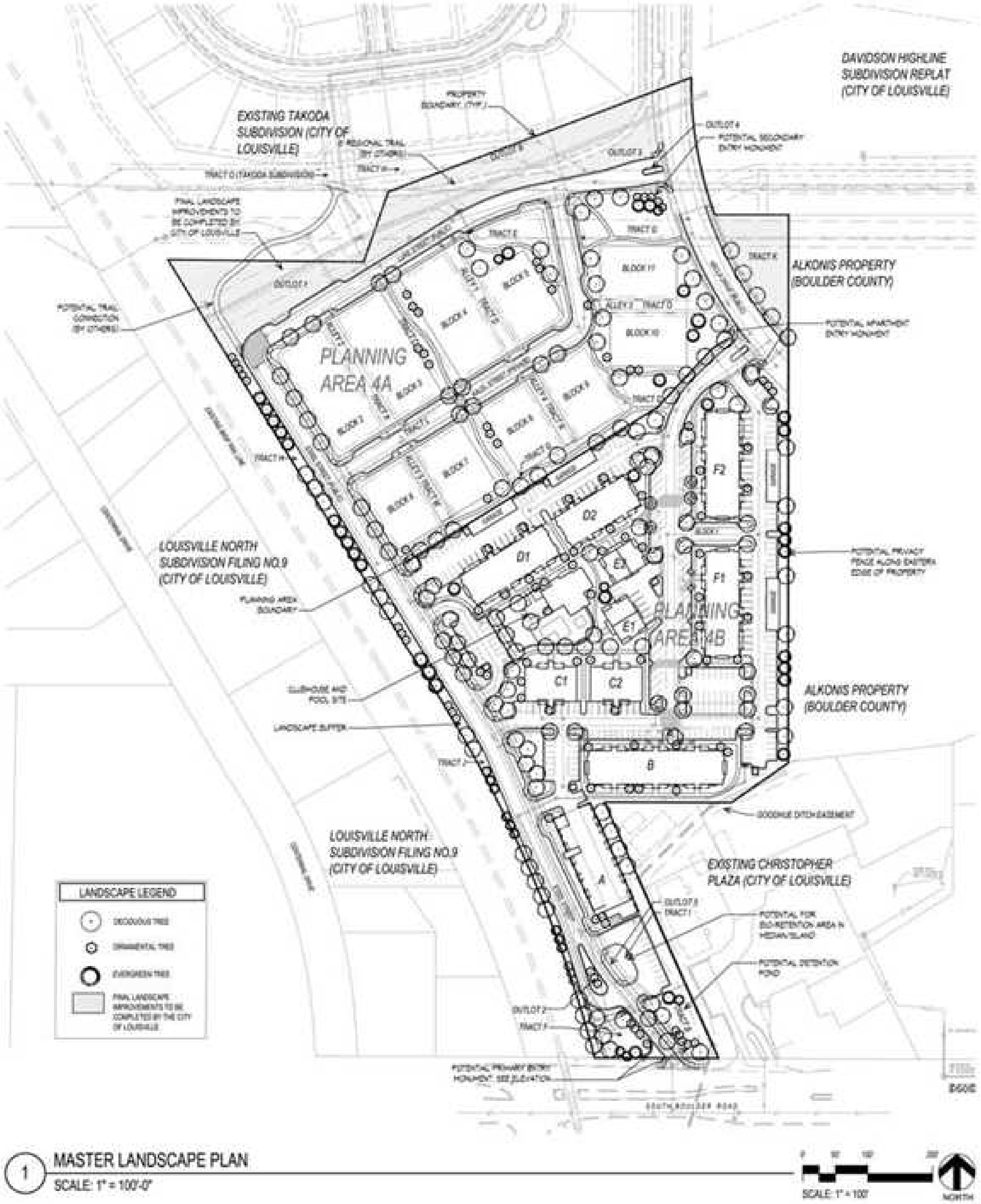
DOCUMENT AMENDMENTS

Project Number: 1169.10
03000531
Designed By: JEH
Drawn By: HAPC
Checked By: JEH
Sheet Number: 5 of 19

STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



1 MASTER LANDSCAPE PLAN
SCALE: 1" = 100'-0"

GENERAL NOTES:

1. FINAL CONSTRUCTION DOCUMENTS SHALL CONFORM TO THE REQUIREMENTS OUTLINED WITHIN THIS PUD SUBMITTAL.
2. LANDSCAPE PLANS ARE SCHEMATIC IN NATURE AND SUBJECT TO MODIFICATION TO MEET THE CITY'S REQUIREMENTS, THE DEVELOPER'S PROGRAM, OR OTHER NECESSARY REQUIREMENTS.
3. LOCATION OF LANDSCAPE PLANTINGS MAY BE ALTERED TO PROVIDE ADEQUATE CLEARANCE FROM THE FINAL LOCATION OF UNDERGROUND UTILITIES. DECIDUOUS TREES SHALL BE PLANTED NO CLOSER THAN 5' FROM WET UTILITIES. EVERGREEN TREES SHALL BE PLANTED NO CLOSER THAN 10' FROM ALL WET UTILITIES.
4. GRASS AREAS DESIGNATED AS IRRIGATED TURF SHALL BE SEEDED OR SODDED WITH A DROUGHT TOLERANT GRASS MIXTURE.
5. PLANTINGS SHALL BE IRRIGATED BY AN UNDERGROUND, AUTOMATIC IRRIGATION SYSTEM. TURF AREAS WILL BE SPRAY IRRIGATED. TREES, SHRUBS, LANDSCAPE BEDS AND TREE LAWNS LESS THAN 10' WIDE SHALL BE SUBSURFACE IRRIGATED. THE TAP AND BACK FLOW PREVENTION DEVICE SIZE AND LOCATION SHALL BE SHOWN ON IRRIGATION PLANS. ROW AREAS SHALL HAVE PERMANENT IRRIGATION SYSTEMS. IRRIGATION SYSTEM COMPONENTS SHALL BE COMPATIBLE TO THE CITY'S EXISTING, TORO-SENTINEL, CENTRAL CONTROL SYSTEM. DESIGN SHALL INCLUDE A FIELD SATELLITE CONTROLLER, MASTER VALVES, FLOW CONTROL VALVES AND ET SENSORS. THIS STANDARD SHALL APPLY TO CITY-OWNED PROPERTY.
6. LANDSCAPE IMPROVEMENTS IN TRACTS SHALL BE OWNED AND MAINTAINED BY THE DEVELOPER AND/OR HOMEOWNER'S ASSOCIATION. OUTLOTS WITHIN ROW SHALL BE IMPROVED BY THE DEVELOPER, MAINTAINED BY THE HOA AND OWNED BY THE CITY OF LOUISVILLE. ALL OTHER OUTLOTS SHALL BE IMPROVED, OWNED AND MAINTAINED BY THE CITY OF LOUISVILLE. PUBLIC ROW AREAS SHALL BE IMPROVED BY THE DEVELOPER, BUT OWNED AND MAINTAINED BY THE CITY OF LOUISVILLE.
7. INDIVIDUAL LOT OWNERS SHALL BE RESPONSIBLE FOR LANDSCAPE MAINTENANCE OF PRIVATE LOTS.
8. PRIVATELY OWNED AND MAINTAINED AREAS INTENDED FOR IRRIGATED AND MOWED TURF SHALL NOT EXCEED 2.5:1 SLOPE. PRIVATELY OWNED NATIVE GRASSES AND SHRUB BEDS SHALL NOT EXCEED 2.5:1 SLOPE.
9. DECIDUOUS TREES WILL BE 2 1/2" CALIPER MINIMUM. EVERGREEN TREES WITH BE 6'-8' HT. MINIMUM (A MINIMUM OF 25% OF EVERGREENS SHALL BE 8').
10. SHRUBS (DECIDUOUS AND EVERGREEN) WILL BE 5 GALLON MINIMUM.
11. 30' SIGHT VISION CLEARANCE AREAS ARE SHOWN ON THE PLANS. PER LOUISVILLE MUNICIPAL CODE SEC. 17.16.100. A VISION CLEARANCE AREA SHALL CONTAIN NO PLANTINGS, WALLS, STRUCTURES OR TEMPORARY OR PERMANENT OBSTRUCTIONS EXCEEDING 2½ FEET IN HEIGHT, MEASURED FROM THE TOP OF THE CURB OR EXISTING GRADE, UNLESS SUCH STRUCTURE OR OBSTRUCTIONS ARE MORE THAN 80 PERCENT OPEN.
12. MECHANICAL DEVICES SHALL BE SCREENED WITH LANDSCAPE MATERIAL.

LANDSCAPE REQUIREMENTS:

THE LANDSCAPE STANDARDS OUTLINED BELOW SUPERCEDE ANY LANDSCAPE REQUIREMENTS FROM PREVIOUS PUD SUBMITTALS AND ARE SPECIFIC TO STEEL RANCH SOUTH.

THE PLANTING PLAN FOR STEEL RANCH SOUTH IS INDICATIVE OF THE SURROUNDING CONTEXT OF LOUISVILLE, CO. THE PLANT PALETTE FEATURES TREES AND SHRUBS WITH MULTI-SEASON INTEREST AND COLOR WHILE BEING ABLE TO TOLERATE THE DRY, WARM CONDITIONS ALONG THE FRONT-RANGE. THE CHOSEN PLANT SCHEME WILL UNITE PLANNING AREAS 4A AND 4B TO CREATE A COHESIVE DESIGN THROUGHOUT THE DEVELOPMENT. THE FOLLOWING REQUIREMENTS HAVE BEEN ESTABLISHED TO ENSURE THE PROPERTY HAS A STRONG AESTHETIC VALUE AND WILL CONTRIBUTE TO LOUISVILLE'S ESTABLISHED REPUTATION OF QUALITY PLACES TO LIVE.

RIGHT OF WAY:

1. HECLA DRIVE
   a. ONE TREE PER 40 LINEAR FEET
   b. IRRIGATED TREE LAWN
   c. MINIMAL SHRUB PLANTINGS TO MAINTAIN VISIBILITY
2. LOCAL STREETS
   a. ONE TREE PER 40 LINEAR FEET ADJACENT TO COMMON AREA
   b. PLANNING AREA 4A- THE TOTAL QUANTITY OF TREES SHALL AVERAGE ONE TREE PER UNIT. NOTE: EACH UNIT MAY NOT HAVE ITS OWN TREE BUT NUMBER OF TREES WILL BE EQUAL TO NUMBER OF UNITS.
3. PRIVATE DRIVES AND ALLEYS: NO LANDSCAPE REQUIRED
4. PARKING AREAS
   a. ONE TREE AND THREE SHRUBS PER EIGHT PARKING SPACES, OR A COMBINATION THEREOF AS AGREED UPON WITH THE PLANNING DEPARTMENT

COMMON AREAS:

1. RAILROAD BUFFER
   a. ONE TREE AND FOUR SHRUBS PER 30 LINEAR FEET, OR A COMBINATION THEREOF AS AGREED UPON WITH THE PLANNING DEPARTMENT
   b. 50% OF TREE PLANTINGS SHALL BE EVERGREEN
2. COMMON AREAS
   a. ONE TREE AND THREE SHRUBS PER 1,000 SQUARE FEET OR A COMBINATION THEREOF AS AGREED UPON WITH THE PLANNING DEPARTMENT

PLANT PALETTE

Botanical Name	Common Name
Deciduous Trees	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Ornamental Trees	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Evergreen Trees	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Deciduous Shrubs	
[illegible]	[illegible]
Evergreen Shrubs	
[illegible]	[illegible]
Ornamental Grasses	
[illegible]	[illegible]
Perennials and Groundcovers	
[illegible]	[illegible]

LANDSCAPE ARCHITECTURE grow studio GROW STUDIO LLC 154 S. 35TH STREET BOULDER, CO 80305 303.963.5452 CONTACT Tom Rogers	ARCHITECTURE & PLANNING HARTRONFT ASSOCIATES Planning Architecture Interior Design CONTACT Erik Hartronft, AIA	RMCS, LLC 950 Spruce Street, Suite 2A Louisville, CO 80027 Tel: (303) 475-2106 Contact: Justin McClure	STEEL RANCH SOUTH PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT MASTER LANDSCAPE PLAN

J3 ENGINEERING CONSULTANTS
Contact: Jason D. Margraf, PE

No.	Date	Description
3	11/21/11	1ST UPDATE TO CITY COMMENTS
2	10/21/11	PLAN AMENDMENT 1
1	10/06/11	ORIGINAL DATE OF PLAN PREPARATION

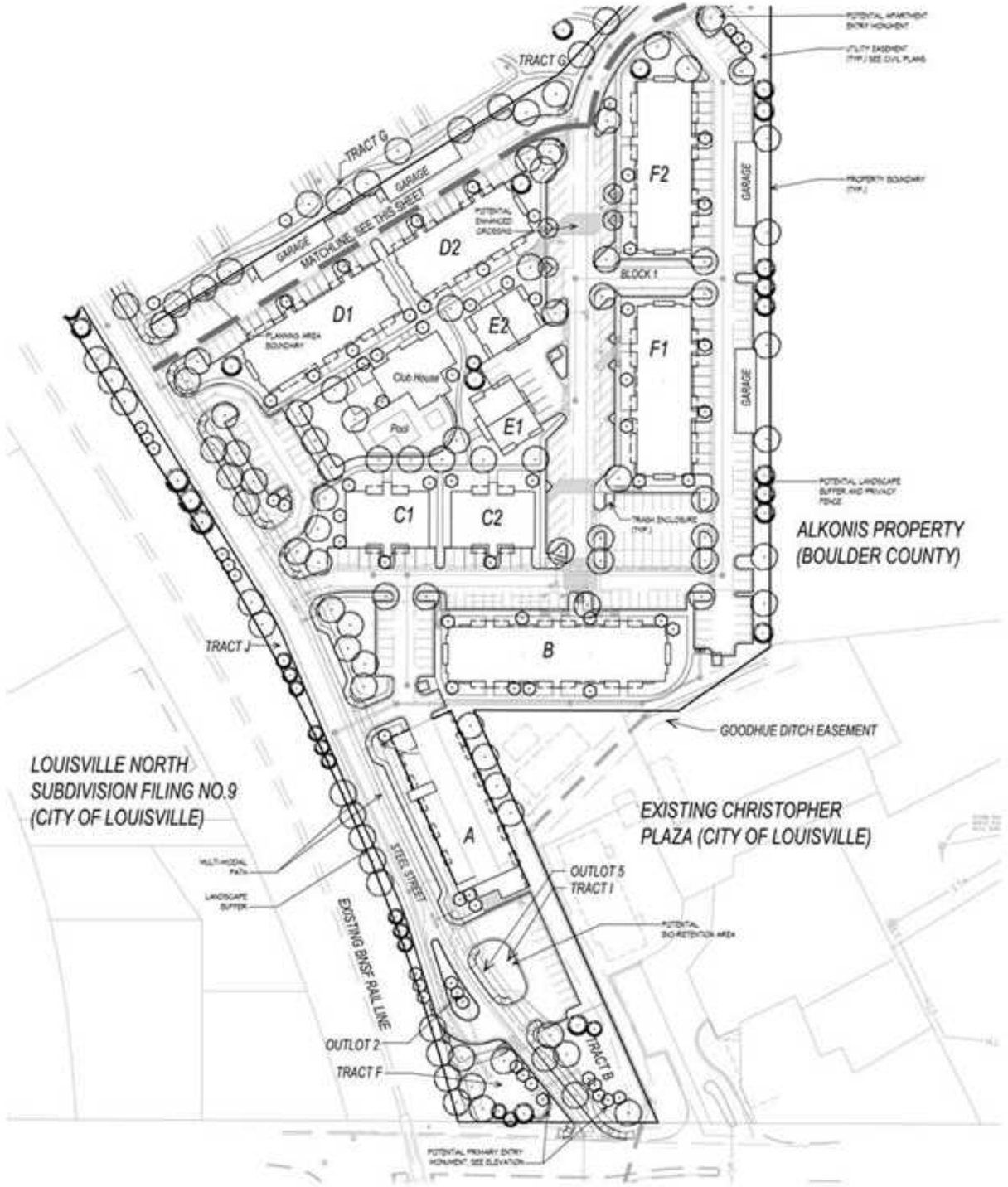
DOCUMENT AMENDMENTS

Project Number: 03000531
Designed By: TJR
Drawn By: BLR
Checked By: TJR
Sheet Number: 6 of 18

STEEL RANCH SOUTH

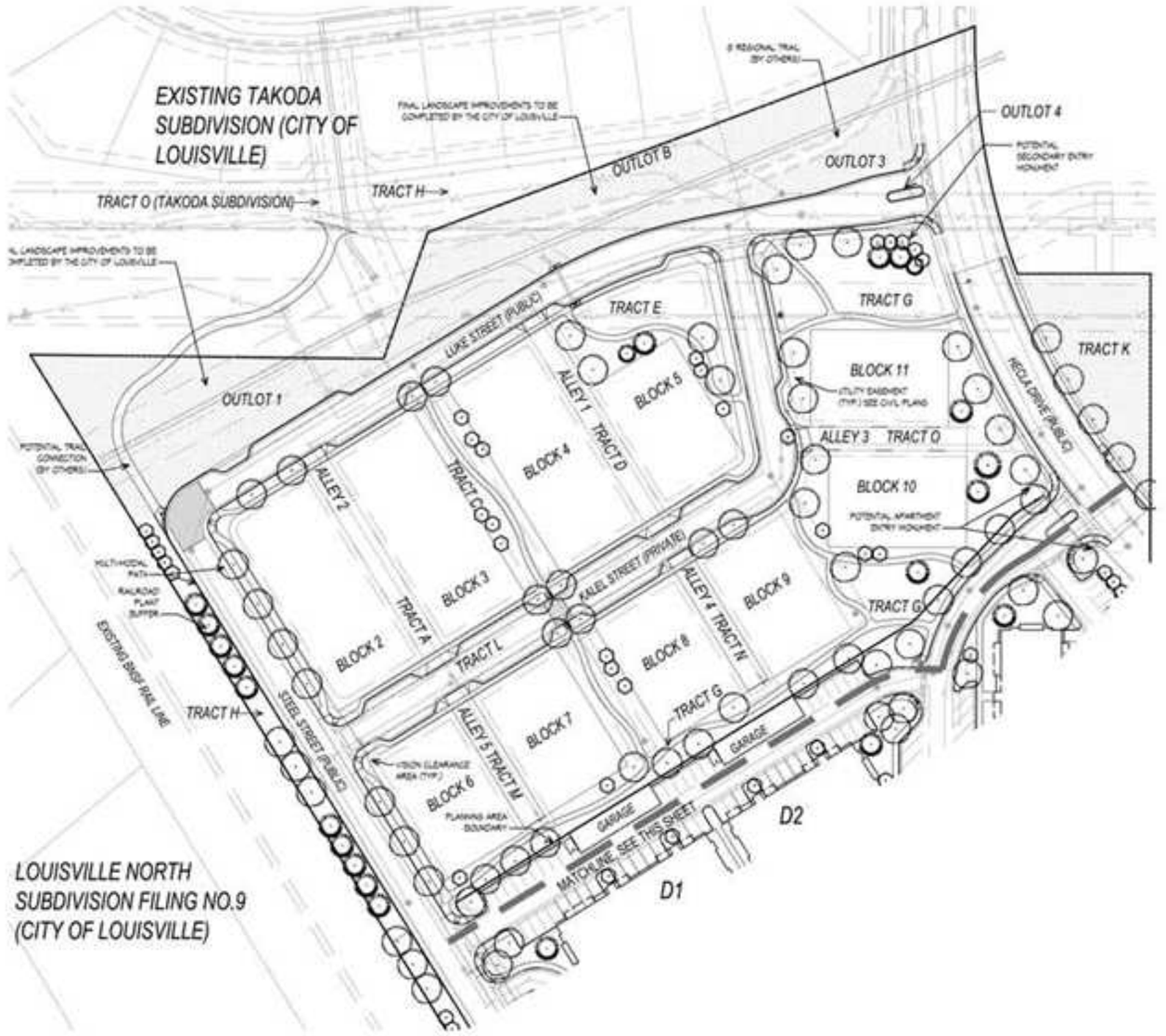
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



1 PLANNING AREA 4B: LANDSCAPE PLAN
SCALE: 1" = 60'-0"

SCALE: 1" = 60' NORTH



2 PLANNING AREA 4A: LANDSCAPE PLAN
SCALE: 1" = 60'-0"

SCALE: 1" = 60' NORTH

LANDSCAPE LEGEND

- DECIDUOUS TREE
- ORNAMENTAL TREE
- EVERGREEN TREE
- FINAL LANDSCAPE IMPROVEMENTS TO BE COMPLETED BY THE CITY OF LOUISVILLE

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ENGINEERING CONSULTANTS
Contact: Jason D. Margraf, PE

STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

MASTER LANDSCAPE PLAN DETAIL

No.	Date	Description
3	11/21/11	1ST UPDATE TO CITY COMMENTS
2	10/21/11	PLAN AMENDMENT 1
1	10/06/11	ORIGINAL DATE OF PLAN PREPARATION

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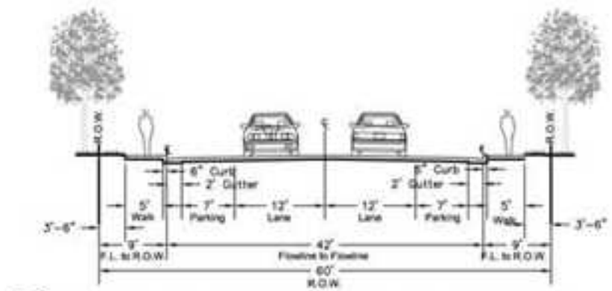
Sheet Number: 7 of 18

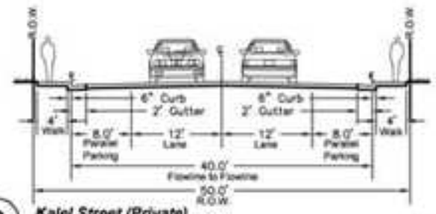
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

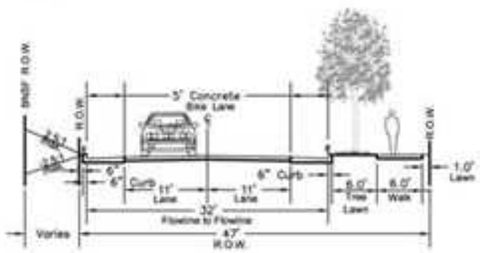
SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



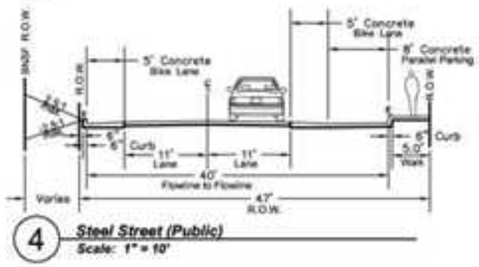
1 **Hecla Drive (Public) - Looking South (STA 114+02.80 to STA 17+16.38)**
Scale: 1" = 10'



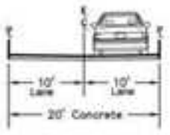
2 **Kalel Street (Private)**
Scale: 1" = 10'



3 **Steel Street (Public)**
Scale: 1" = 10'

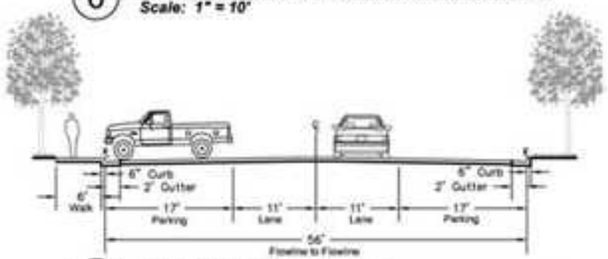


4 **Steel Street (Public)**
Scale: 1" = 10'

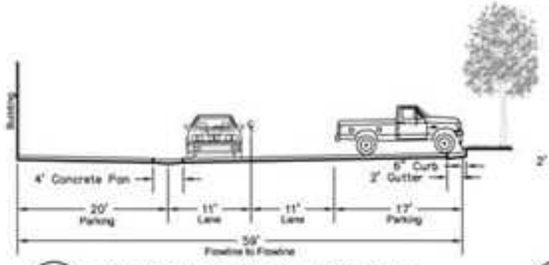


5 **Alley / Drive (Private)**
Scale: 1" = 10'

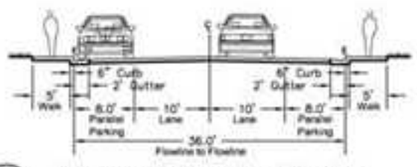
6 **"Main Street" Private Angled Parking lot and Drive Aisle**
Scale: 1" = 10'



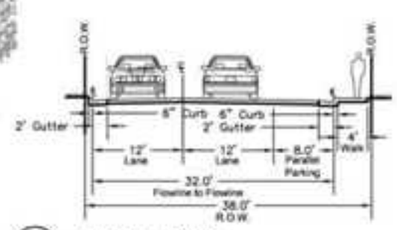
7 **Private Parking lot and Drive Aisle**
Scale: 1" = 10'



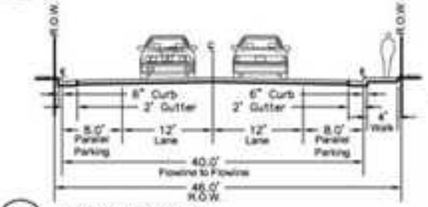
8 **Typical Private Parking lot and Drive Aisle**
Scale: 1" = 10'



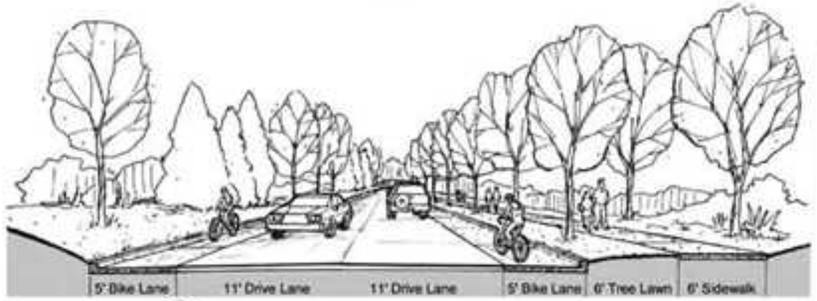
9 **Private Parallel Parking lot and Drive Aisle**
Scale: 1" = 10'



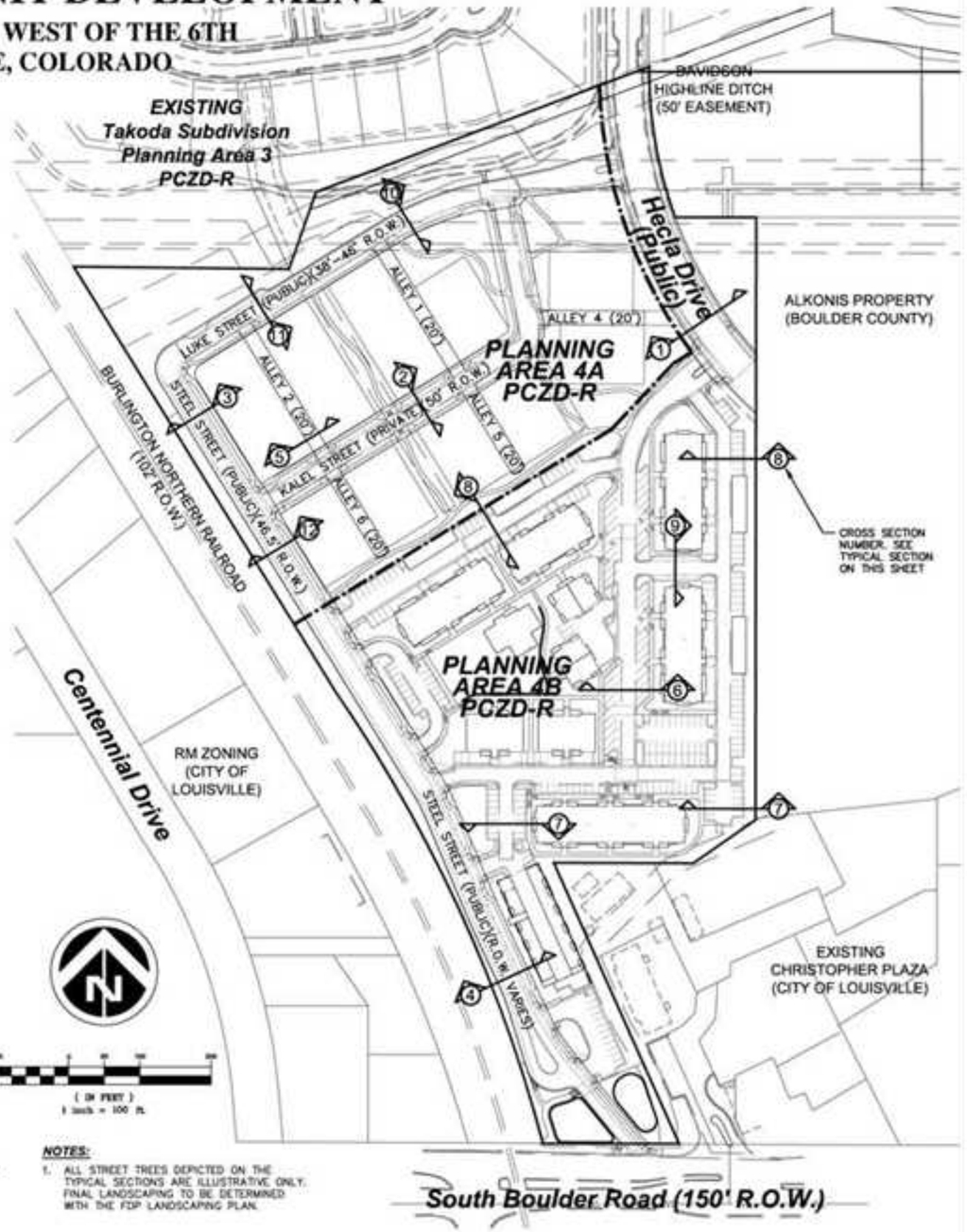
10 **Luke Street (Public)**
Scale: 1" = 10'



11 **Luke Street (Public)**
Scale: 1" = 10'



12 **Multi-Modal Corridor concept (Steel Street)**
Scale: NTS



NOTES:

1. ALL STREET TREES DEPICTED ON THE TYPICAL SECTIONS ARE ILLUSTRATIVE ONLY. FINAL LANDSCAPING TO BE DETERMINED WITH THE FDP LANDSCAPING PLAN.

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3	11/29/11	1st UPDATE TO CITY COMMENTS
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Drawn By: ACE
Checked By: JDM
Sheet Number: 8 of 18

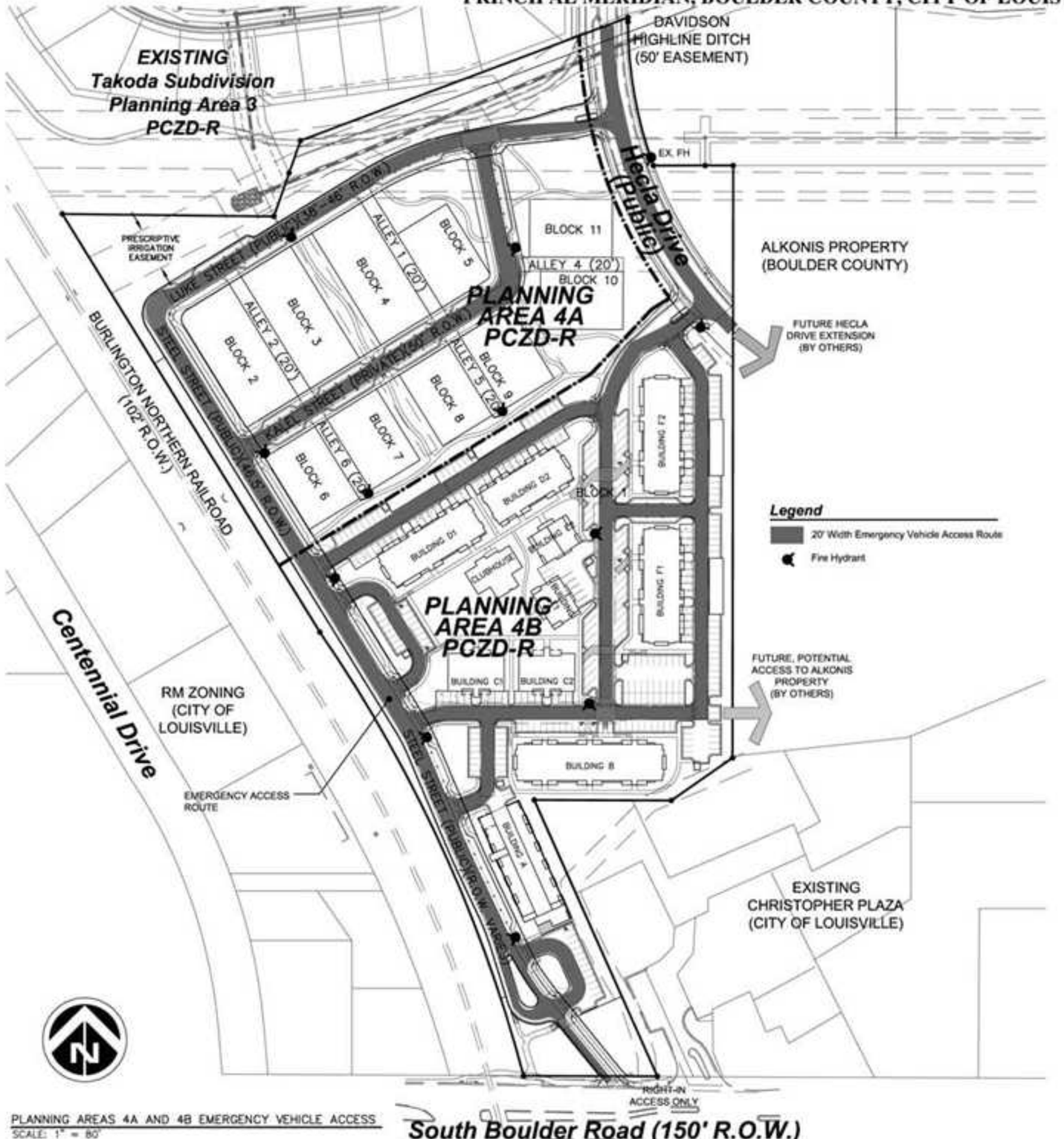
STEEL RANCH SOUTH PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

STREET CROSS SECTIONS

STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

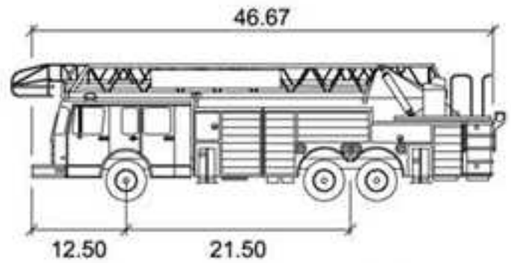
SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



Legend

- 20' Width Emergency Vehicle Access Route
- Fire Hydrant

PLANNING AREAS 4A AND 4B EMERGENCY VEHICLE ACCESS
SCALE: 1" = 80'



LOUISVILLE TRUCK 17

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 5.00
Steering Angle	: 45.00

NOTES:

1. THE CITY OF LOUISVILLE TRUCK WAS EVALUATED UTILIZING THE PROGRAM AUTOTURN FOR ALL ROADS DEPICTED IN GRAY. THOSE AREAS ACCOMMODATE THIS VEHICLE.
2. FIRE HYDRANTS DEPICTED ARE TO PROVIDE THE REQUIRED COVERAGE TO SERVICE PA 4A AND PA 4B. THE UNITS WITHIN PA 4B ARE ANTICIPATED TO BE SPRINKLED. FINAL LOCATION OF THE FIRE HYDRANTS MAY VARY SLIGHTLY FROM INFORMATION DEPICTED ON THIS PLAN AND WILL BE DETERMINED WITH SUBSEQUENT CONSTRUCTION PLAN SUBMITTALS.

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Contact: Jason D. Margraf, PE

STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

EMERGENCY VEHICLE ACCESS

No.	Date	Description
3	11/21/11	1st UPDATE TO CITY COMMENTS
2	10/21/11	PLAN AMENDMENT 1
1	10/12/11	ORIGINAL DATE OF PLAN PREPARATION

DOCUMENT AMENDMENTS

Project Number: 03000531
Designed By: SCD Drawn By: ACE
Checked By: JDM
Sheet Number: 9 of 18

STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO

TO BE COMPLETED WITH FUTURE FINAL PUD

LANDSCAPE ARCHITECTURE

grow studio

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303.963.5452

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HARTRONFT ASSOCIATES

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Tel: (303) 475-2106
Contact: Justin McClure

13 ENGINEERING CONSULTANTS
Contact: Jason D. Margraf, PE

STEEL RANCH SOUTH PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

MAINTENANCE PLAN

No.	Date	Description
3	11/21/11	1st UPDATE TO CITY COMMENTS
2	10/21/11	PLAN AMENDMENT 1
1	10/10/11	ORIGINAL DATE OF PLAN PREPARATION

DOCUMENT AMENDMENTS

Project Number: 03000531
Designed By: SCD
Drawn By: ACE
Checked By: JDM
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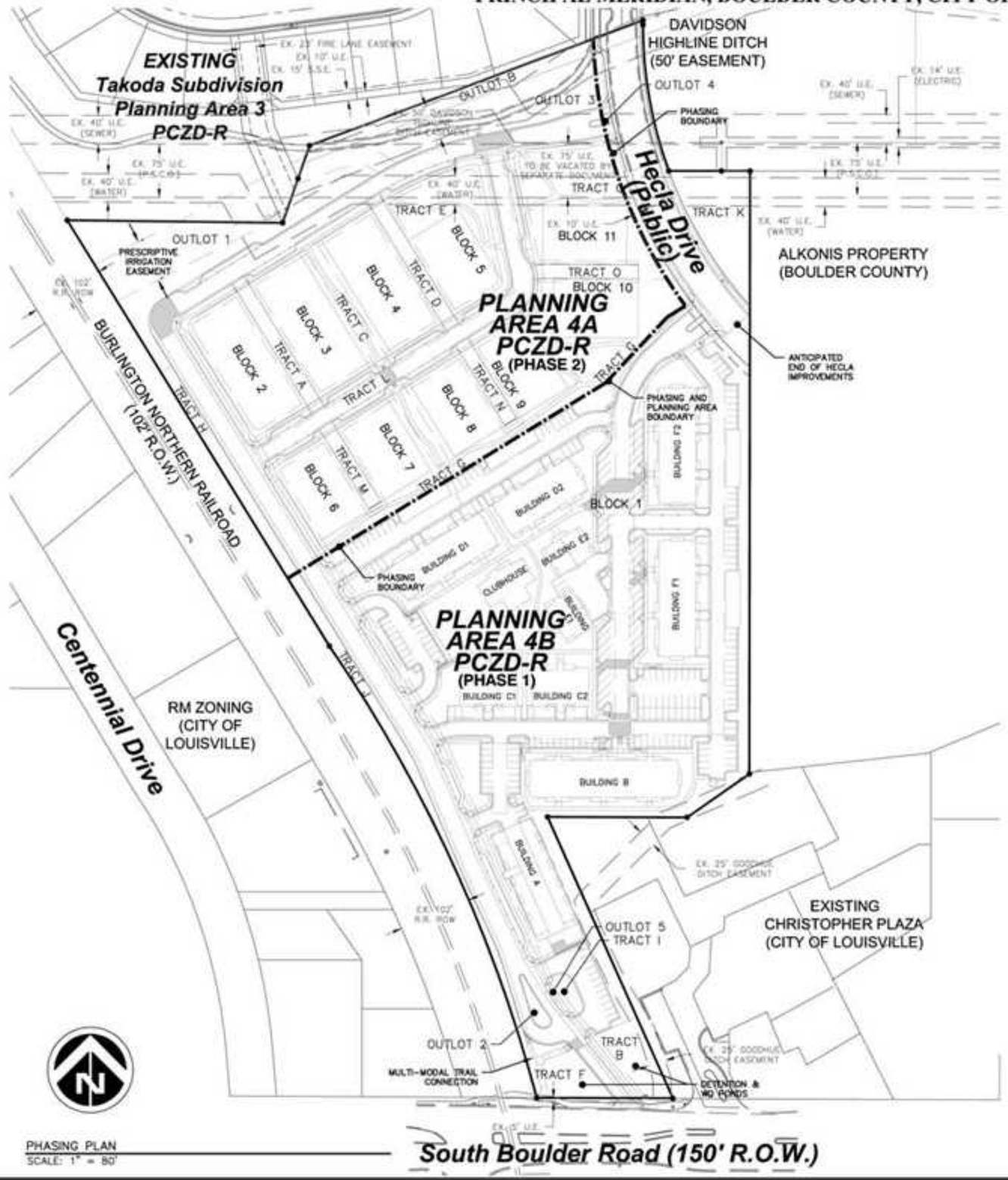
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



PHASING PLAN
SCALE: 1" = 80'

HORIZONTAL PUBLIC IMPROVEMENT NOTES

PUBLIC HORIZONTAL IMPROVEMENTS FOR THE PROPERTY WILL BE CONSTRUCTED TO SERVICE THE PHASES OF THE PROJECT. THIS PHASING PLAN IS NOT MEANT TO DICTATE THE PHASING ASSOCIATED WITH THIS PROJECT BEYOND WHAT IS STATED IN THESE NOTES. THE PUBLIC HORIZONTAL IMPROVEMENTS INCLUDE THE FOLLOWING:

1) HECLA DRIVE FROM THE EXISTING NORTHERN TERMINUS AT PROPERTY LINE TO THE EASTERN PROPERTY BOUNDARY IS REQUIRED WITH THE FIRST PHASE OF THE DEVELOPMENT.
2) THE SANITARY SEWER LOCATED WITHIN HECLA DRIVE.
3) THE WATER LINE LOCATED WITHIN HECLA ROAD, SOUTH BOULDER ROAD AND THE CONNECTION THEREOF. PHASES MUST HAVE TWO POINTS OF CONNECTION AND MAY ROUTE THROUGH THE PROPERTY TO ALLOW FOR THE INDEPENDENT DEVELOPMENT OF PLANNING AREA 4A AND PLANNING AREA 4B, AND SUB-PHASING, THEREOF.
4) THE STORM SEWER REQUIRED TO SERVICE THE INDEPENDENT DEVELOPMENT OF PA 4A AND PA 4B AND IDENTIFIED PONDS.
5) PHASING OF THE RESIDENTIAL PORTIONS OF THE SITE MAY OCCUR IN ANY ORDER AND IS NOT LIMITED EXCEPT AS REQUIRED TO PROVIDE A LOOPED WATER SERVICE, SANITARY SERVICE, TWO POINTS OF EMERGENCY ACCESS AND THAT NO "DEAD END" LONGER THAN 500' WITHOUT A SECONDARY EMERGENCY ACCESS.
6) PUBLIC HORIZONTAL IMPROVEMENTS ARE REQUIRED, AS NEEDED TO MEET THE REQUIREMENTS OF THE PRECEDING BULLET, PRIOR TO OR IN CONJUNCTION WITH THE FIRST PROPOSED PHASE.
7) OFF-SITE REGIONAL IMPROVEMENTS INCLUDE EXTENSION OF THE WATER MAIN AND STORM SEWER SYSTEM TO THE MOST REASONABLY DIRECT CONNECTION POINT WITHIN S. BOULDER ROAD. THE CITY OF LOUISVILLE WILL PROVIDE ADEQUATE CAPACITY TO SERVICE THE DEMANDS ASSOCIATED WITH THIS PUD.
8) PUBLIC HORIZONTAL IMPROVEMENTS AS ANNOTATED ON THIS SHEET SHALL BE CONSTRUCTED WITH THE FIRST PHASE.
9) PLANNING AREA 4A, PHASE 2, AND PLANNING AREA 4B, PHASE 1, MAY BE CONSTRUCTED INDEPENDENTLY OR CONCURRENTLY.
10) RETAINING WALLS MAY BE REQUIRED TO ACCOMMODATE THE POND VOLUMES AND SHALL BE ALLOWED.

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STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

HORIZONTAL PUBLIC IMPROVEMENT NOTES

No.	Date	Description
3	11/21/11	1st UPDATE TO CITY COMMENTS
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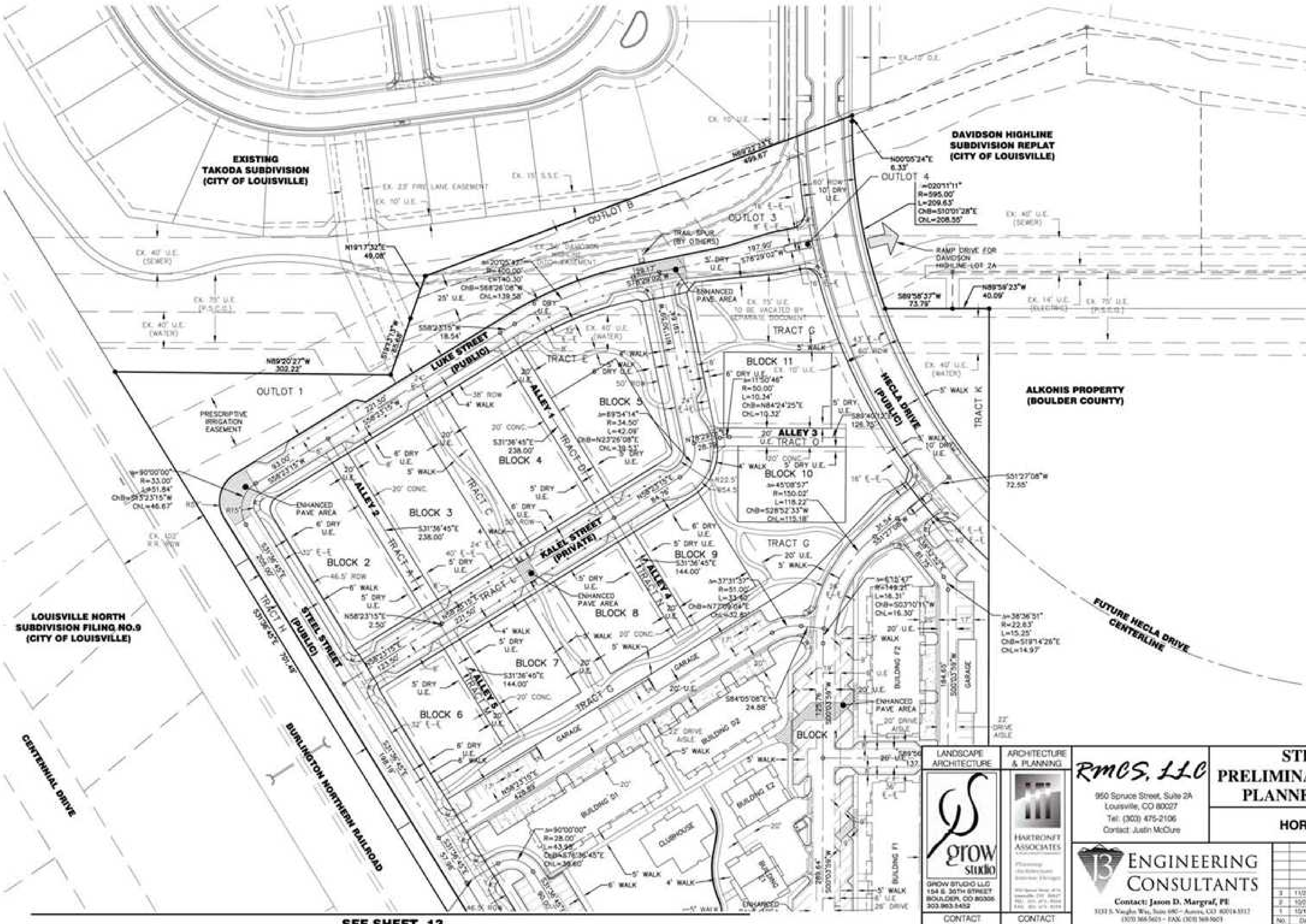
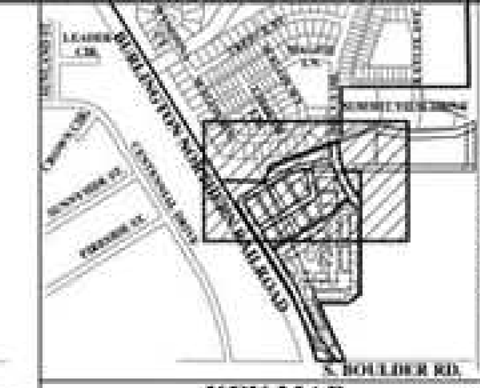
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO





SEE SHEET 13

LEGEND

- CENTER LINE OF STREET
- PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- EASEMENT LINE
- CURB, GUTTER, CROSSPAN SIDEWALK & RAMP

REINFORCED CONCRETE PIPE	RCP
WATER QUALITY	WQ
WATER LINE	W/L
SANITARY SEWER	SAN
UTILITY EASEMENT	U.E.
DRAINAGE & UTILITY EASEMENT	D.U.E.
ACCESS & UTILITY EASEMENT	A.U.E.
SANITARY SEWER EASEMENT	S.S.E.
WATERLINE EASEMENT	W.E.
RIGHT-OF-WAY	ROW
FLOWLINE	℄
BLOCK NUMBER	①

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STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

HORIZONTAL CONTROL PLAN

No.	Date	Description
3	11/21/11	1st UPDATE TO CITY COMMENTS
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1	10/10/11	ORIGINAL DATE OF PLAN PREPARATION

DOCUMENT AMENDMENTS

Project Number: 03000531
Designed By: SCD
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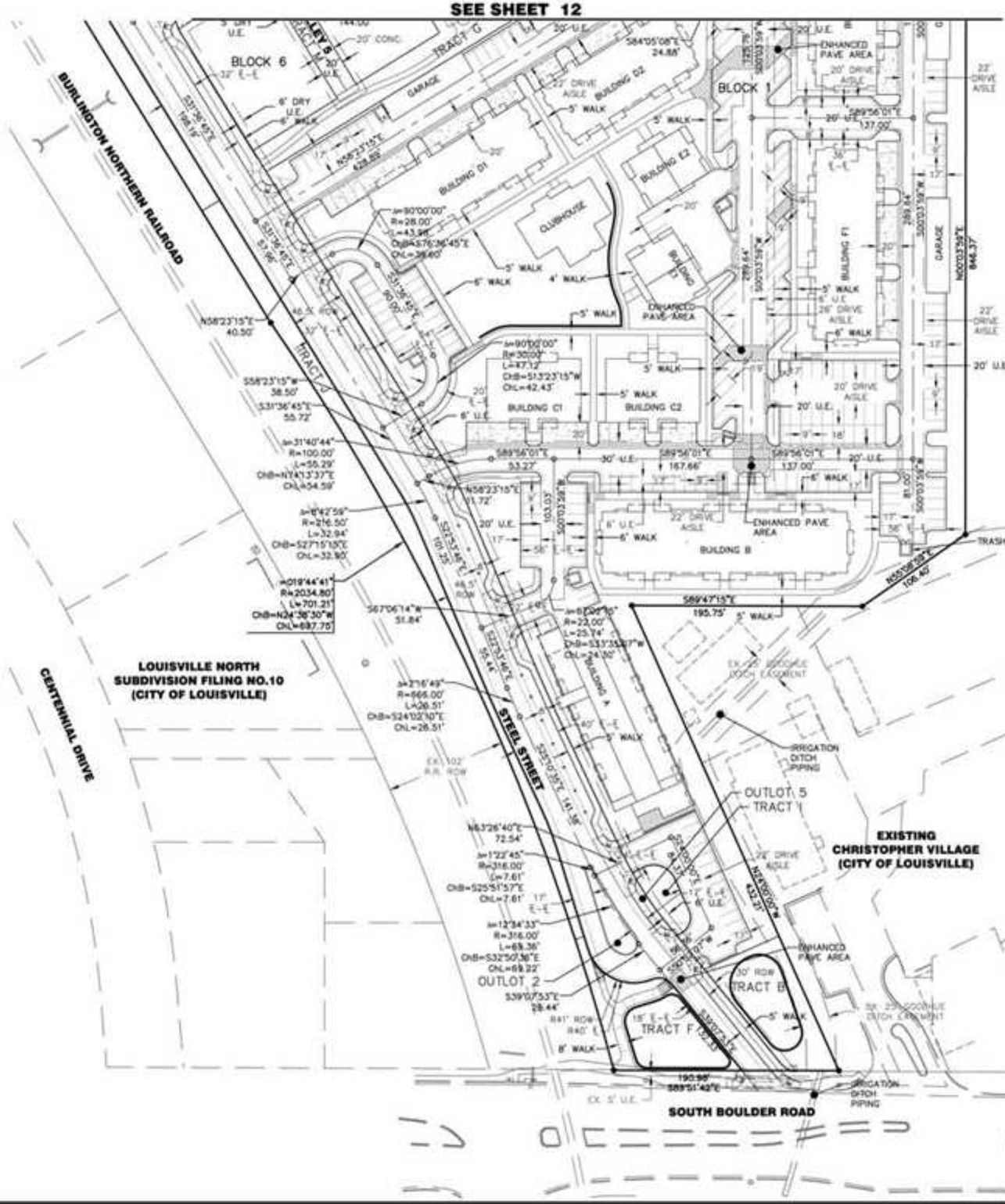
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO

SEE SHEET 12



KEY MAP NTS

(IN FEET)
1 inch = 50 ft.

LEGEND

- CENTER LINE OF STREET
- PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- EASEMENT LINE

CURB, GUTTER, CROSSPAN SIDEWALK & RAMP

REINFORCED CONCRETE PIPE	RCP
WATER QUALITY	WQ
WATER LINE	W/L
SANITARY SEWER	SAN
UTILITY EASEMENT	U.E.
DRAINAGE & UTILITY EASEMENT	D.U.E.
ACCESS & UTILITY EASEMENT	A.U.E.
SANITARY SEWER EASEMENT	S.S.E.
WATERLINE EASEMENT	W.E.
RIGHT-OF-WAY	ROW
FLOWLINE	℄
BLOCK NUMBER	①

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STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

HORIZONTAL CONTROL PLAN

No.	Date	Description
3	11/21/11	1st UPDATE TO CITY COMMENTS
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Project Number: 03000531
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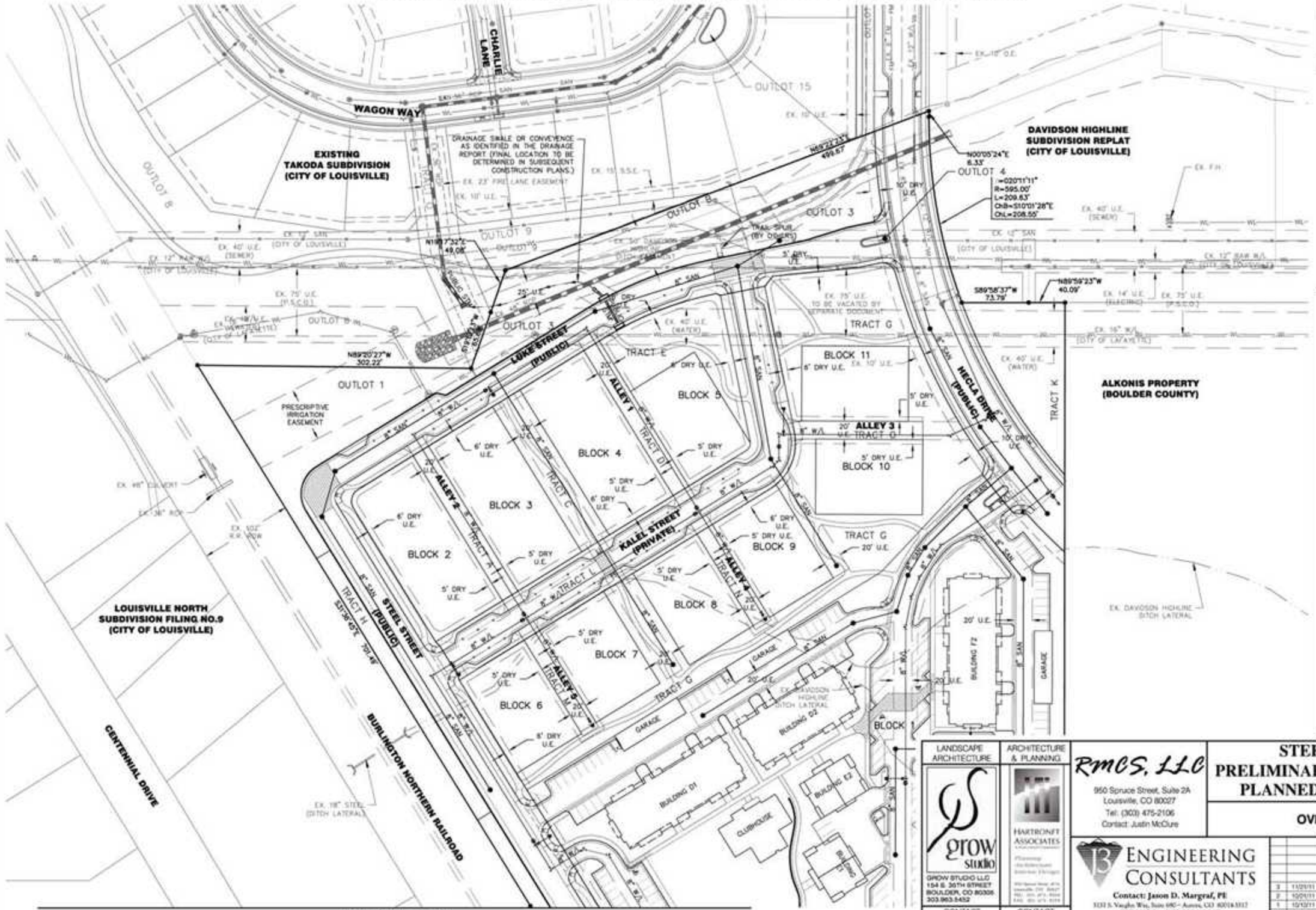
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



KEY MAP NTS

(IN FEET)
1 inch = 50 ft.

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- LOT LINE
- EASEMENT LINE
- WATERLINE W/ GATE VALVE & TEE
- SANITARY SEWER W/ MANHOLE
- STORM SEWER W/ INLET & F.E.S.
- EX. WATERLINE W/ VALVE & TEE
- EX. SANITARY SEWER W/ MANHOLE
- EX. SANITARY SEWER FORCE MAIN
- EX. STORM SEWER W/ INLET & F.E.S.
- EX. OVERHEAD ELECTRICITY LINE
- CURB, GUTTER, CROSSPAN SIDEWALK & RAMP

REINFORCED CONCRETE PIPE	RCP
WATER LINE	W/L
SANITARY SEWER	SAN
UTILITY EASEMENT	U.E.
DRAINAGE & UTILITY EASEMENT	D.U.E.
ACCESS & UTILITY EASEMENT	A.U.E.
SANITARY SEWER EASEMENT	S.S.E.
WATERLINE EASEMENT	W.E.

SEE SHEET 15

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STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

OVERALL UTILITY PLAN

No.	Date	Description
3	11/21/11	1st UPDATE TO CITY COMMENTS
2	10/21/11	PLAN AMENDMENT 1
1	10/13/11	ORIGINAL DATE OF PLAN PREPARATION

DOCUMENT AMENDMENTS

Project Number: 03000531
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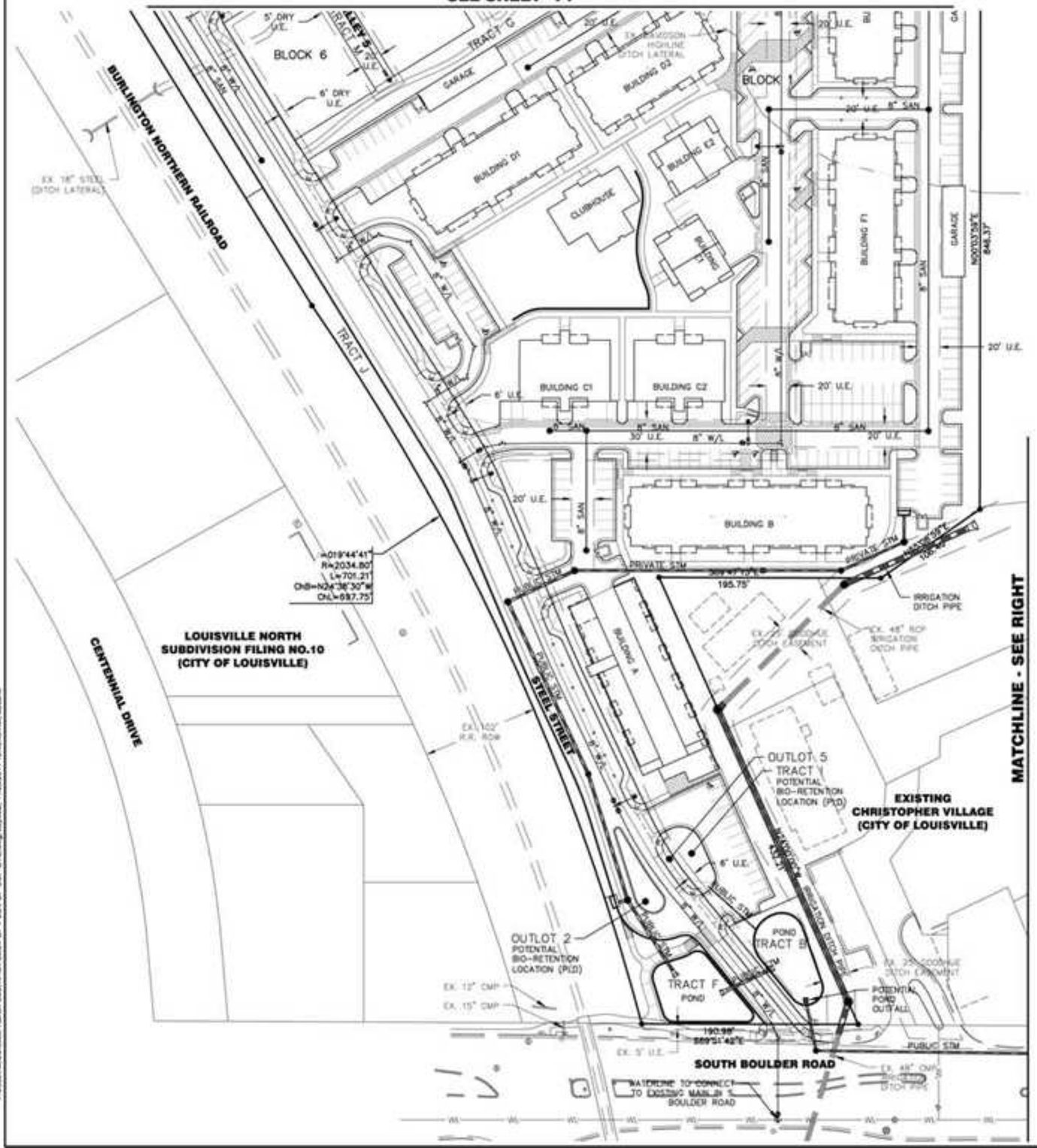
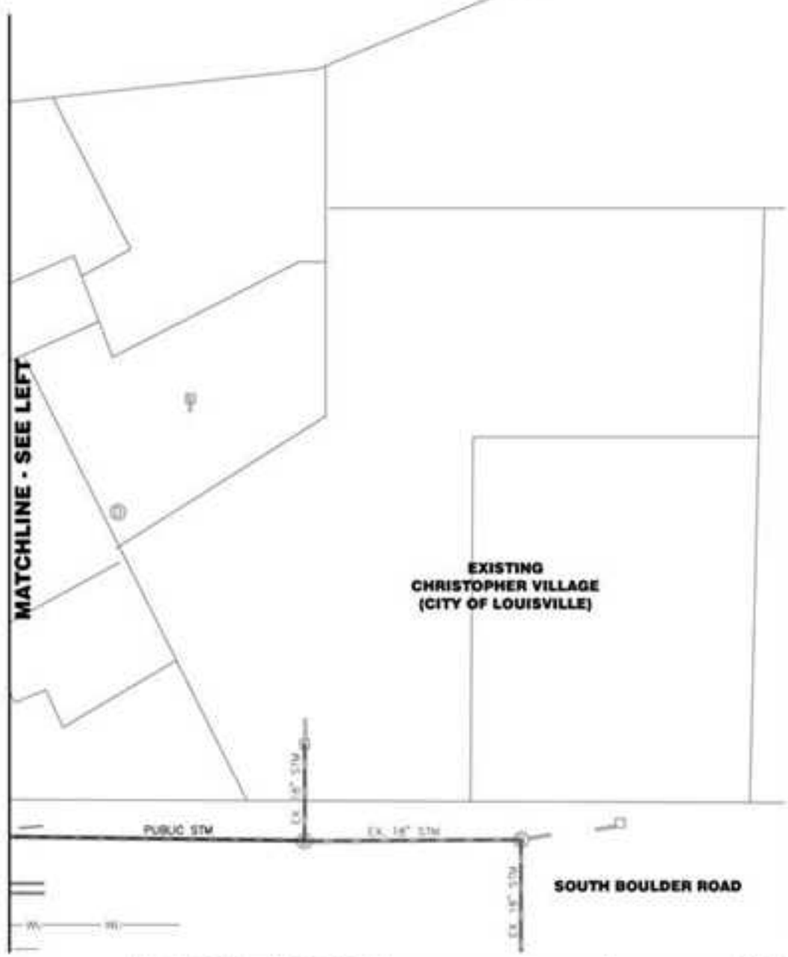
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO

SEE SHEET 14





ALKONIS PROPERTY (BOULDER COUNTY)

(IN FEET)
1 inch = 50 ft.

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- LOT LINE
- EASEMENT LINE
- WATERLINE W/ GATE VALVE & TEE
- SANITARY SEWER W/ MANHOLE
- STORM SEWER W/ INLET & F.E.S.
- EX. WATERLINE W/ VALVE & TEE
- EX. SANITARY SEWER W/ MANHOLE
- EX. SANITARY SEWER FORCE MAIN
- EX. STORM SEWER W/ INLET & F.E.S.
- EX. OVERHEAD ELECTRICITY LINE
- CURB, GUTTER, CROSSPAN SIDEWALK & RAMP

REINFORCED CONCRETE PIPE	RCP
WATER LINE	W/L
SANITARY SEWER	SAN
UTILITY EASEMENT	U.E.
DRAINAGE & UTILITY EASEMENT	D.U.E.
ACCESS & UTILITY EASEMENT	A.U.E.
SANITARY SEWER EASEMENT	S.S.E.
WATERLINE EASEMENT	W.E.

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Contact: Justin McClure

ENGINEERING CONSULTANTS
Contact: Jason D. Margraf, PE

STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

OVERALL UTILITY PLAN

No.	Date	Description
3	11/29/11	1st UPDATE TO CITY COMMENTS
2	10/21/11	PLAN AMENDMENT 1
1	10/13/11	ORIGINAL DATE OF PLAN PREPARATION

DOCUMENT AMENDMENTS

Project Number: 03000531
Designed By: SCD Drawn By: ACE
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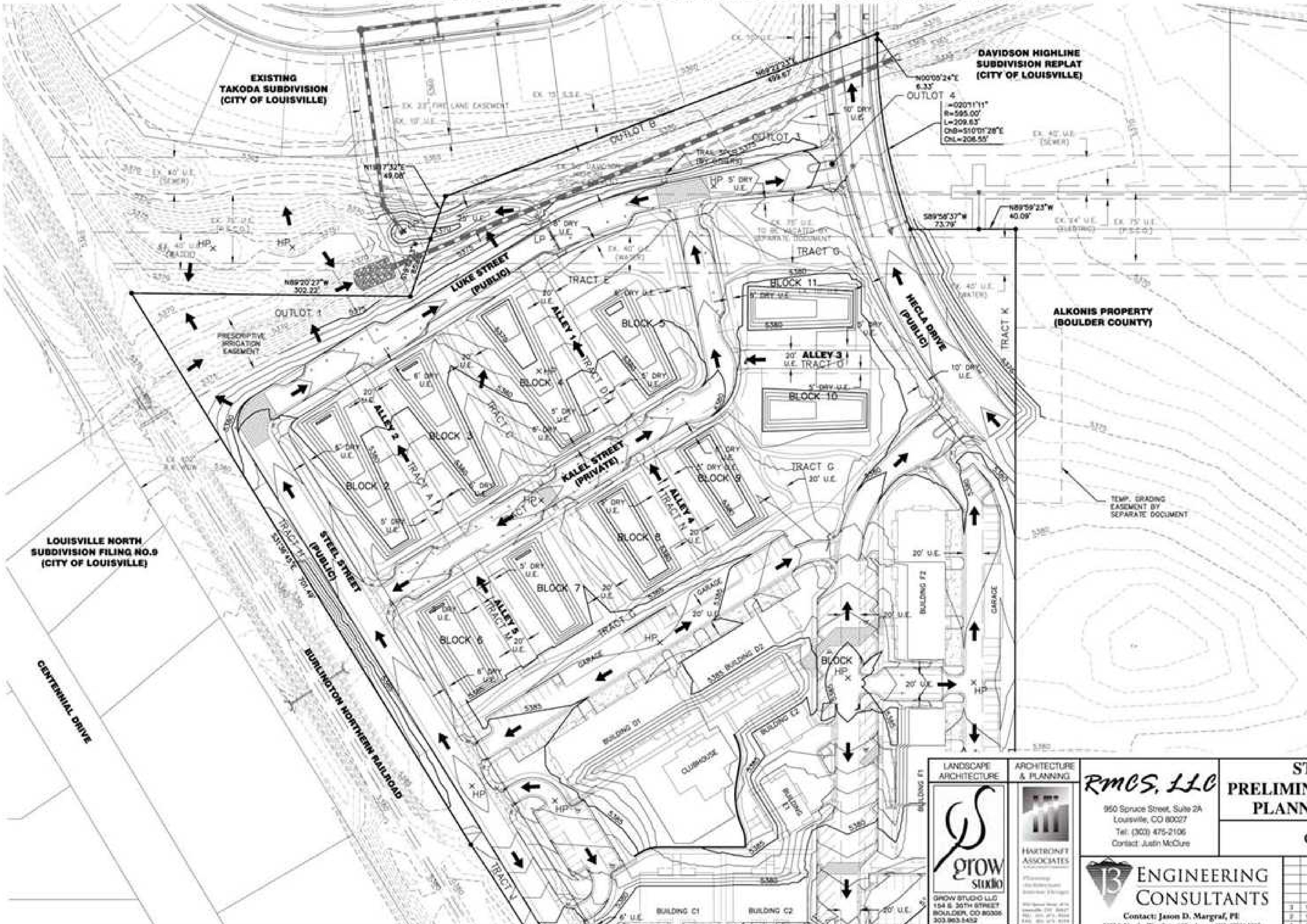
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO



NOTES:

1. FINISHED GRADES ARE DEPICTED ON STREETS, OVERLOT GRADES ARE DEPICTED ON BUILDING SITES.
2. THE GRADING PRESENTED IS CONCEPTUAL BUT SHALL BE CONSIDERED AS BASIS FOR SUBSEQUENT GRADING PLANS.

(IN FEET)
1 inch = 50 ft.

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- LOT LINE
- EASEMENT LINE
- PROPOSED CONTOURS 5800
- EXISTING CONTOURS 5700
- xHP / xLP — HIGH POINT / LOW POINT
- FLOW DIRECTIONAL ARROW

SEE SHEET 17

LANDSCAPE ARCHITECTURE	ARCHITECTURE & PLANNING
GROW STUDIO LLC, 154 S. 30TH STREET, BOULDER, CO 80305, 303.963.5452	HARTRONFT ASSOCIATES
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STEEL RANCH SOUTH PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

OVERALL GRADING PLAN

ENGINEERING CONSULTANTS
Contact: Jason D. Margraf, PE

No.	Date	Description
3	11/21/11	1st UPDATE TO CITY COMMENTS
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1	10/10/11	ORIGINAL DATE OF PLAN PREPARATION

DOCUMENT AMENDMENTS

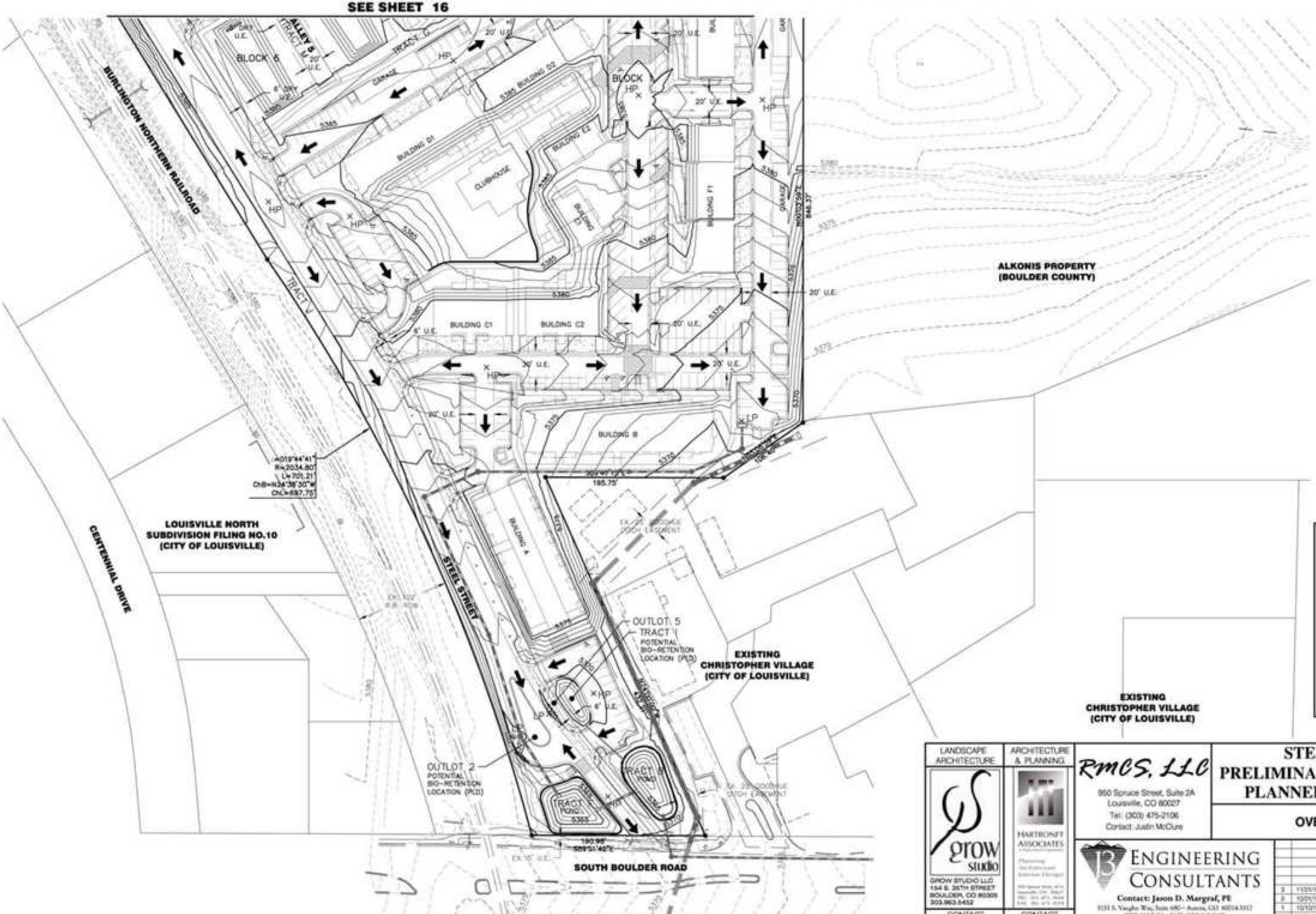
Project Number: 03000531
Designed By: SCD
Drawn By: ACE
Checked By: JDM
Sheet Number: 16 of 18

STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO

SEE SHEET 16



KEY MAP NTS

NOTES:

1. FINISHED GRADES ARE DEPICTED ON STREETS, OVERLOT GRADES ARE DEPICTED ON BUILDING SITES.
2. THE GRADING PRESENTED IS CONCEPTUAL BUT SHALL BE CONSIDERED AS BASIS FOR SUBSEQUENT GRADING PLANS.

(IN FEET)
1 inch = 50 ft.

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- LOT LINE
- EASEMENT LINE
- PROPOSED CONTOURS 5800
- EXISTING CONTOURS 5700
- HP / LP — HIGH POINT / LOW POINT
- FLOW DIRECTIONAL ARROW

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ENGINEERING CONSULTANTS
Contact: Jason D. Margraf, PE

STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

OVERALL GRADING PLAN

No.	Date	Description
3	11/21/11	1st UPDATE TO CITY COMMENTS
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1	10/13/11	ORIGINAL DATE OF PLAN PREPARATION

DOCUMENT AMENDMENTS

Project Number: 03000531
Designed By: SCD Drawn By: ACE
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Sheet Number: 17 of 18

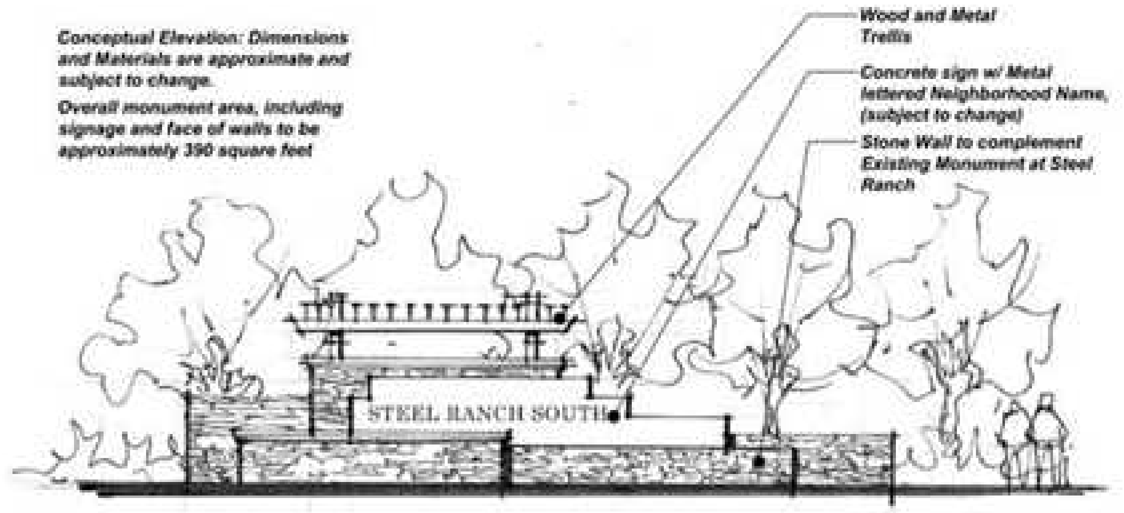
STEEL RANCH SOUTH

PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

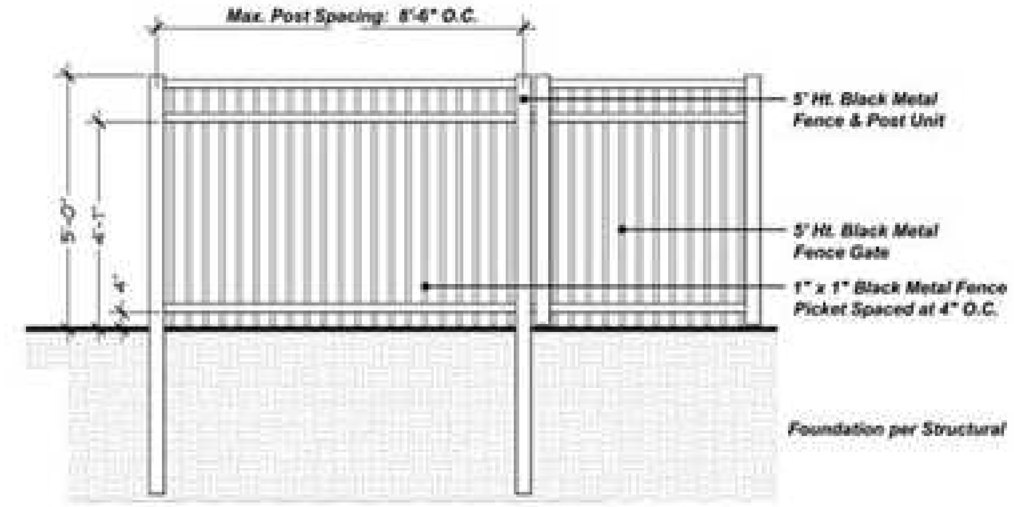
SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BOULDER COUNTY, CITY OF LOUISVILLE, COLORADO

Conceptual Elevation: Dimensions and Materials are approximate and subject to change.

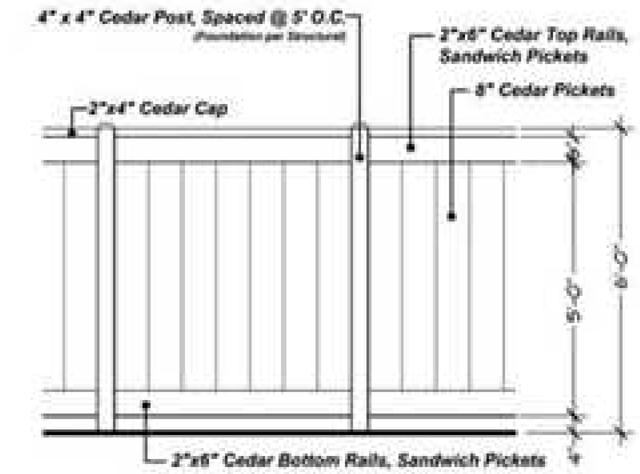
Overall monument area, including signage and face of walls to be approximately 390 square feet



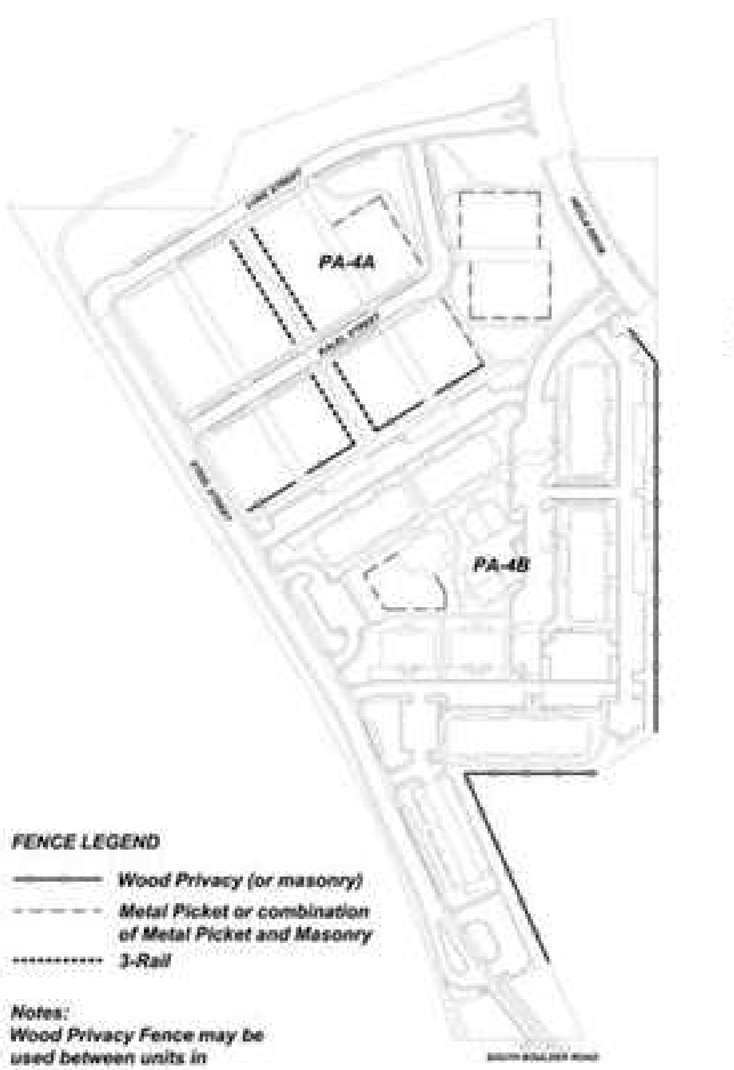
1 MONUMENT SIGN
SCALE: 1/8" = 1'-0" EXTRUDED ELEVATION



2 METAL PICKET FENCE
SCALE: 1/2" = 1'-0" ELEVATION



3 WOOD PRIVACY FENCE
SCALE: 1/2" = 1'-0" ELEVATION



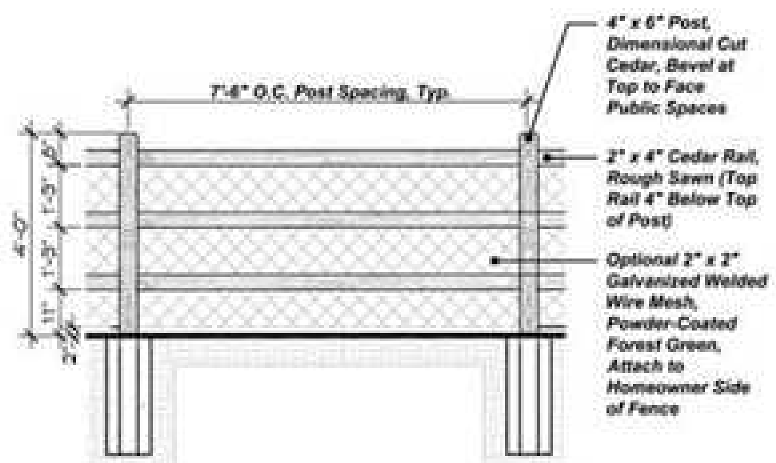
FENCE LEGEND

- Wood Privacy (or masonry)
- Metal Picket or combination of Metal Picket and Masonry
- 3-Rail

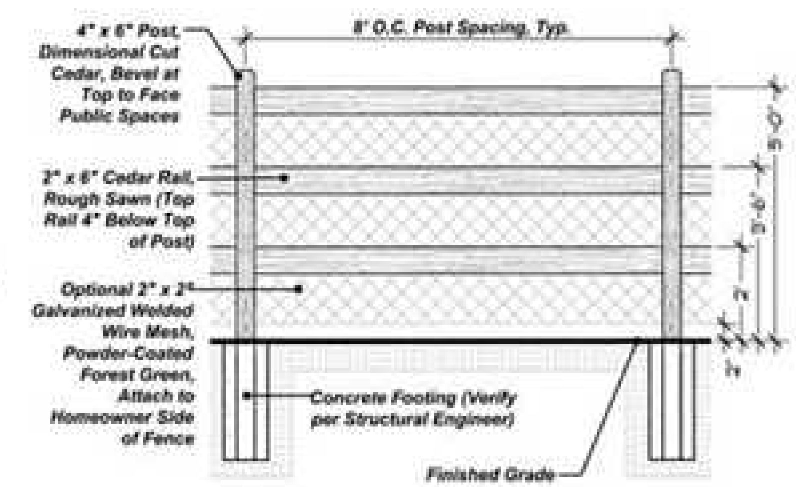
Notes:
Wood Privacy Fence may be used between units in planning area 4A

Current Fence Plans are conceptual and will be finalized with the Final PUD

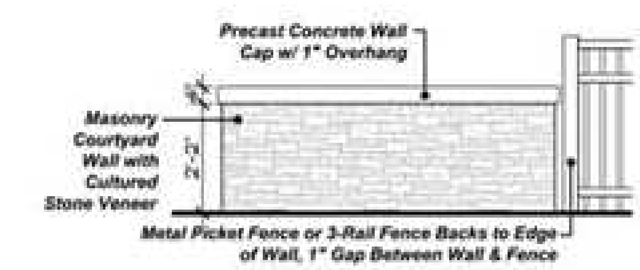
7 FENCING PLAN
SCALE: 1"=150' PLAN



4 4' HIGH 3 RAIL FENCE
SCALE: 1/2" = 1'-0" ELEVATION



5 5' HIGH 3 RAIL FENCE
SCALE: 1/2" = 1'-0" ELEVATION



6 MASONRY WALL
SCALE: 1/2" = 1'-0" ELEVATION

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STEEL RANCH SOUTH
PRELIMINARY DEVELOPMENT PLAN/ PLANNED UNIT DEVELOPMENT

TYPICAL SITE DETAILS

No.	Date	Description
3	11/21/11	1ST UPDATE TO CITY COMMENTS
2	10/21/11	PLAN AMENDMENT 1
1	10/06/11	ORIGINAL DATE OF PLAN PREPARATION

DOCUMENT AMENDMENTS

Project Number: 03000531
Designed By: TJR Drawn By: BLR
Checked By: TJR
Sheet Number: 18 of 18

REVISED
TRAFFIC IMPACT ANALYSIS

STEEL RANCH

LOUISVILLE, COLORADO

LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
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FAX (303) 333-1107
E-mail: lsc@lscdenver.com

November 15, 2011

Mr. Justin McClure
RMCS, LLC
726 Front St. Suite B
Louisville, CO 80027

Re: Steel Ranch
Louisville, Colorado
(LSC #110200)

Dear Mr. McClure:

We are pleased to submit our revised Traffic Impact Analysis (TIA) report of the proposed Steel Ranch (formerly known as Takoda Village) development to be located in Louisville, Colorado. This report updates our September 5, 2007 analysis to incorporate the addition of the six-acre parcel of land east of the railroad and north of South Boulder Road. It includes the new right-in-only access on South Boulder Road. This traffic impact study first provides a summary of the existing roadways and traffic volumes in the vicinity of the proposed development, followed by estimates of the amount and directional distribution of vehicular traffic likely to be generated. This information is then combined with projected future traffic volumes in the vicinity to evaluate the impact of the new development on the existing and future roadway system and, where appropriate, to make recommendations for the necessary roadway improvements.

We trust that our findings and recommendations will assist in the planning of the proposed development. Please call if we can be of further assistance.

Respectfully submitted,

LSC Transportation Consultants, Inc.

By: _____
Alex J. [illegible], PTOE

AJA/wc

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Revised
Traffic Impact Analysis

Steel Ranch

Louisville, Colorado

Prepared for

RMCS, LLC
726 Front St. Suite B
Louisville, CO 80027

Prepared by

LSC Transportation Consultants, Inc.
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September 5, 2007
Revised: September 29, 2011
Revised: November 15, 2011
(LSC #110200)

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SECTION A
Introduction

The proposed Steel Ranch (formerly known as Takoda Village) development is located north of South Boulder Road and west of SH 42 in Louisville, Colorado. The 75-acre site is expected to contain a mix of single-family, multi-family, and commercial development.

LSC Transportation Consultants, Inc. has been retained by RMCS, LLC to prepare an update to our September, 2007 Traffic Impact Analysis of the proposed development, consistent with the requirements of the City of Louisville. This update reflects the addition of a parcel of land with additional residential units and an access on South Boulder Road. This analysis identifies the impacts of the proposed development on the surrounding roadway system and describes its access requirements. Specific steps taken in this analysis process are described below:

- A review and analysis of present roadway and traffic conditions in the vicinity of the site and an analysis of the proposed improvements that have been planned for roadways providing access in the general area.
- A determination of the amount of daily and peak-hour traffic that would be generated by the proposed development and an analysis of the directional distribution of that traffic on the surrounding roadway system.
- A projection of future background traffic volumes on the adjacent street system for the Year 2015 and the Year 2030, which provides a basis for estimating future impacts.
- A determination of future traffic impacts associated with the proposed development. These impacts are based upon estimates of the total amount of traffic on the surrounding roadway system in the vicinity of the development.
- A determination of street and access improvements that will be necessary to mitigate the traffic impacts associated with the proposed development.

SECTION B
Roadway and Traffic Conditions

The location of the proposed Steel Ranch development is shown in the vicinity map depicted in Figure 1. The site is generally bounded by SH 42 to the east, Indian Peak, Parcel S and Paschal Drive to the north, the Burlington Northern Santa Fe Rail Line to the west, and South Boulder Road and Christopher Village on the south. SH 42, Hecla Drive, Paschal Drive, and South Boulder Road are the primary roadways serving the site.

Area Roadways

Major roadways in the vicinity of the site are described below with a brief discussion of anticipated future roadway improvements.

- SH 42, located east of the site, is a north-south arterial roadway that begins south of South Boulder Road and extends north beyond Lafayette (where it is known as 95th Street) to the City of Longmont, where it becomes Hover Road. South of South Boulder Road, this roadway extends one mile before turning eastward at a traffic signal and then connecting to US 287. SH 42 is signalized at its intersection with South Boulder Road and is a two-lane rural roadway with a posted speed limit of 45 mph in the vicinity of the site. The roadway is classified as a Non-Rural Principal Highway (NR-A) in the May, 2002 *CDOT Access Category Assignment Schedule*. The *SH 42 Draft Traffic and Access Study*, January 25, 2006, projects SH 42 as a four-lane principal arterial south of Arapahoe Road.

- South Boulder Road is an east-west arterial roadway that begins east of SH 157 (Foothills Parkway) in Boulder and extends east to 120th Street in Lafayette. The four-lane roadway has a posted speed of 35 mph and a raised median in the vicinity of the site. The South Boulder Road/SH 42 intersection has recently been improved to provide dual left-turn lanes and two through lanes on all approaches.

- Paschal Drive is a two-lane east-west collector street which starts at SH 42 and extends east into the North End development in Louisville and into the Waneka Landing subdivision in Lafayette. Paschal Drive recently has been extended west from SH 42 to serve Indian Peaks, Parcel S, and Steel Ranch.

- Hecla Drive is a two-lane east-west collector with connectivity between SH 42 and Plaza Drive. An access onto SH 42 is planned to be built on the west side, opposing the existing Hecla Drive when the properties east of Steel Ranch develop.

Existing Traffic Conditions

Figure 2 shows existing traffic volumes traffic control and lane geometry. Peak-hour traffic counts were obtained by Counter Measures, Inc. in December 2006 at the intersections of SH 42/Hecla Drive and SH 42/Paschal Drive and in February, 2005 at SH 42/South Boulder Road. These counts were taken during the weekday morning and evening peak-hours. The raw count data is included in Appendix A. Figure 2 also displays weekday daily traffic volumes on SH 42 in the vicinity of the proposed development. This figure indicates that SH 42 carries about 21,175 vehicles per day.

Approximate Scale
Scale: 1"=1,000'

Figure 1

Vicinity Map

Steel Ranch Update- Louisville, CO. (LSC #110200)

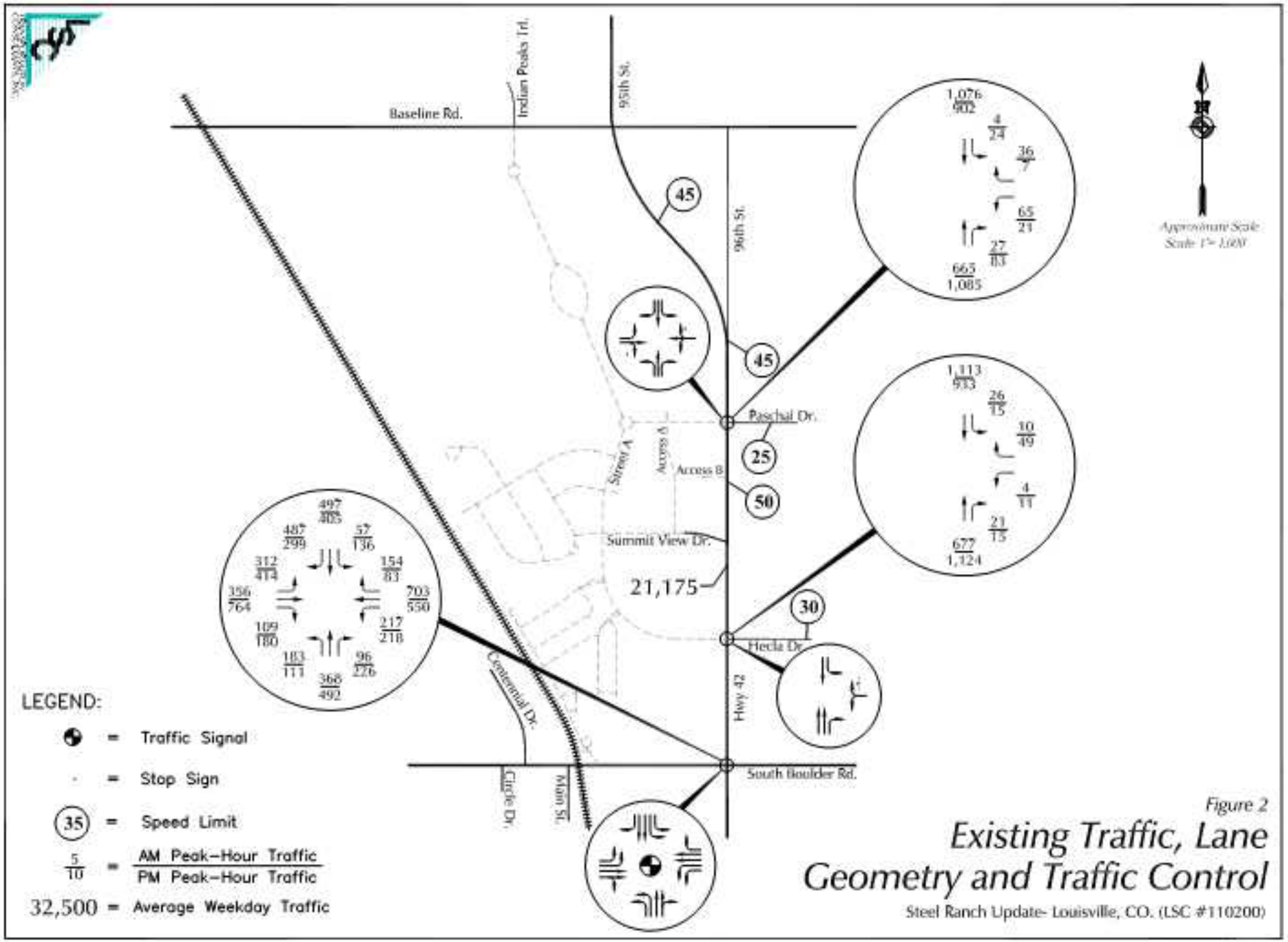


Figure 2

Existing Traffic, Lane Geometry and Traffic Control

Steel Ranch Update- Louisville, CO. (LSC #110200)

SECTION C
Future Traffic Conditions

Two design years were evaluated for this analysis: 2015, since the development is expected to be built out by that year; and 2030, to coincide with long range forecasts available from the *SH 42 Draft Access Study*.

Projected background traffic volumes for Years 2015 and Year 2030 are shown in Figures 3 and 4, respectively. Background traffic represents the future traffic which would exist if the proposed site was not developed. Background traffic volumes for Years 2015 and 2030 were based upon the *SH 42 Draft Access Study*, with the addition of projected traffic from the nearby Indian Peaks Parcels R and S, located north of the site and the North End, located east of the site. Year 2030 background traffic also includes traffic expected to be generated by currently vacant parcels located east of Steel Ranch. An annual growth rate of 1.0 percent per year is expected on SH 42 and 0.5 percent on Paschal Drive, Hecla Drive, and South Boulder Road.

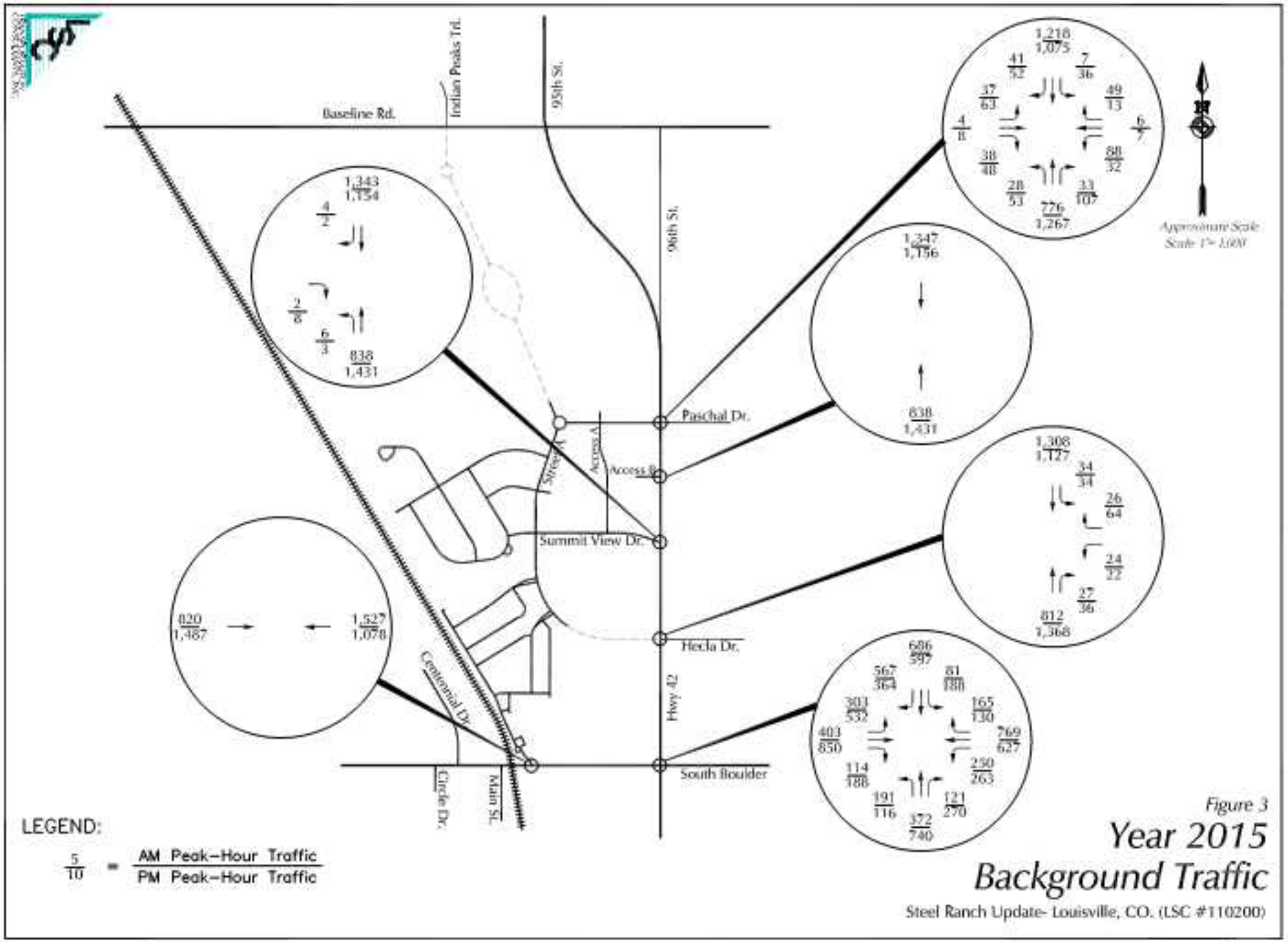


Figure 3

Year 2015 Background Traffic

Steel Ranch Update- Louisville, CO. (LSC #110200)

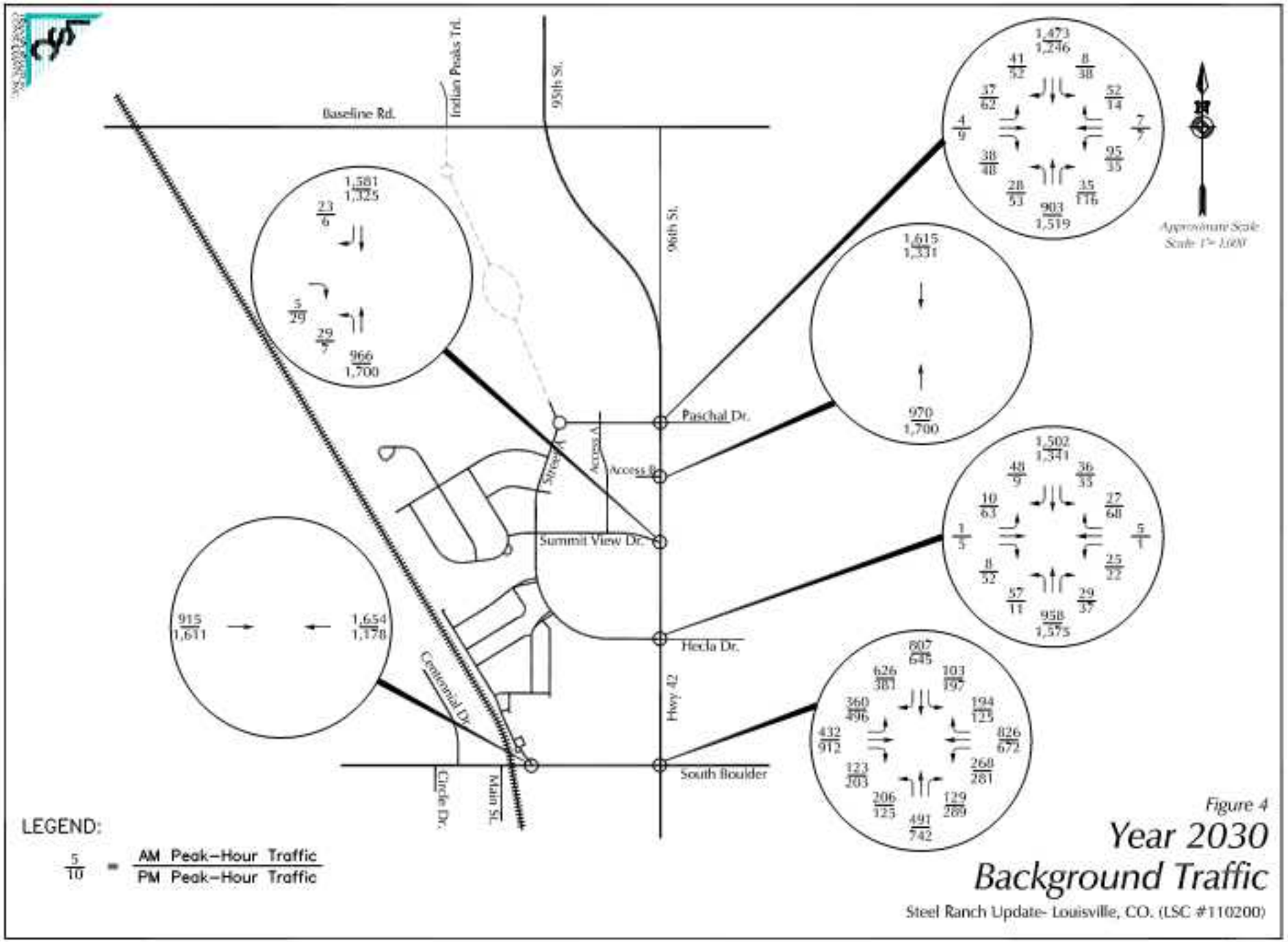


Figure 4

Year 2030 Background Traffic

Steel Ranch Update- Louisville, CO. (LSC #110200)

SECTION D
Traffic Generation

The proposed Steel Ranch development will include approximately 152 single-family detached dwelling units, 86 single-family attached dwelling units, 220 apartments, and 104,000 square feet of office/commercial space. The amount and mix of office/ commercial development will be subject to market conditions, parking requirements, and other factors. For the purpose of this analysis, 52,000 square feet of office space and 52,000 square feet of retail space were assumed. The amount of traffic that will be generated by the proposed development has been estimated based upon trip generation rates published by the Institute of Transportation Engineers (ITE) in the 8th Edition, 2008, of *Trip Generation*. Table 1 shows the estimated average weekday traffic volumes and the weekday morning and evening peak-hour traffic volumes expected to be generated by the proposed development.

As illustrated in Table 1, the development will generate approximately 6,294 daily vehicle-trips, with about 3,147 entering and 3,147 leaving the site during a 24-hour period. Of these, approximately 398 vehicle-trips will occur during the AM peak-hour, with 160 vehicles entering and 238 vehicles exiting the site. During the PM peak-hour, approximately 553 vehicle-trips will occur, with 290 vehicles entering and 263 vehicles exiting the site.

Table 1
ESTIMATED TRAFFIC GENERATION
Steel Ranch South
Louisville, Colorado
(LSC #110200; November, 2011)

Land Use Description	Quantity	Trip Generation Rates (1) Average Weekday	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out	Vehicle - Trips Generated Average Weekday	AM Peak Hour In	AM Peak Hour Out	PM Peak - Hour In	PM Peak - Hour Out
Takoda Village, September, 2007											
Single-Family (2)	124 DU (7)	9.57	0.19	0.56	0.64	0.37	1,187	24	69	79	46
Multi-Family (3)	248 DU	5.86	0.07	0.37	0.35	0.17	1,453	17	92	87	42
Office (5)	52.0 KSF	11.01	1.36	0.19	0.25	1.24	573	71	10	13	64
Commercial (6)	52.0 KSF	44.32	0.63	0.40	1.19	1.52	2,305	33	21	62	79
						Total	**5,517**	**144**	**192**	**241**	**232**
October, 2011 Land Use Plan											
Planning Area 4 -Steel Ranch South											
Single-Family Attached (3)	86 DU	5.81	0.07	0.37	0.35	0.17	500	6	32	30	15
Apartments (4)	220 DU	6.65	0.10	0.41	0.40	0.22	1,463	22	90	88	48
Balance of Steel Ranch											
Single-Family (2)	152 DU	9.57	0.19	0.56	0.64	0.37	1,455	29	85	97	56
Office (5)	52.0 KSF	11.01	1.36	0.19	0.25	1.24	573	71	10	13	64
Commercial (6)	52.0 KSF	44.32	0.63	0.40	1.19	1.52	2,305	33	21	62	79
Total	458 DU						**6,294**	**160**	**238**	**290**	**263**

Notes:

(1) Source: *Trip Generation*, Institute of Transportation Engineers, 7th Edition, 2003 for 2007 Plan and 8th Edition, 2008 for 2011 Plan.
(2) ITE Land Use No. 210, Single-Family Detached Housing
(3) ITE Land Use No. 230, Residential Condominium/Townhomes
(4) ITE Land Use No. 220, Apartments
(5) ITE Land Use No. 710, General Office
(6) ITE Land Use No. 814, Specialty Retail
(7) Dwelling Units
(8) 1,000 square feet

SECTION E

Traffic Distribution and Traffic Assignment

The directional distribution of generated vehicular traffic on the roadways providing access to and from the proposed Steel Ranch development is one of the most important elements in planning its specific access requirements and in determining its traffic impacts on surrounding roadways and intersections. Major factors which influence the traffic distribution assumptions include:

- The site's location relative to the site with respect to the cities of Louisville, Lafayette, Longmont, Boulder and the rest of the Denver metropolitan area;
- The roadway network serving the area. The primary roadway serving the site is SH 42; and
- The specific access and circulation characteristics of the development plan.

Figure 5 shows the anticipated directional distribution of site-generated traffic for the proposed Steel Ranch development. Approximately 13 percent of site-generated traffic will be oriented to and from the north on SH 42; 13 percent will be oriented to and from the west on Baseline Road; eight percent will be oriented to and from the east on Baseline Road; 18 percent will be oriented to and from the west on South Boulder Road; 18 percent will be oriented to and from the south on SH 42; eight percent will be oriented to and from the east on South Boulder Road; three percent will access the shopping center to the east on Hecla Drive; two percent will access the site from East Paschal Drive; five percent will access the site from Indian Peaks, Parcel S, and 12 percent will remain internal to the site due to the mixed-use nature of the proposed land use.

Site-Generated Traffic Assignment

By applying the traffic generation estimates of Table 1 to the distribution patterns identified in Figure 5, the resulting site-generated traffic on the street system can be computed. These peak-hour traffic volumes are shown in Figures 6 and 7. These figures show the number of site-generated vehicle turning movements expected at the various access intersections with SH 42, Hecla Drive, and Plaza Drive for the Years 2015 and 2030, respectively.

Total Traffic

Total AM and PM peak-hour traffic volumes for the Year 2015 and Year 2030 are shown in Figures 8 and 9, respectively, which are the sums of the background traffic volumes from Figures 3 and 4 plus site-generated traffic volumes from Figures 6 and 7.

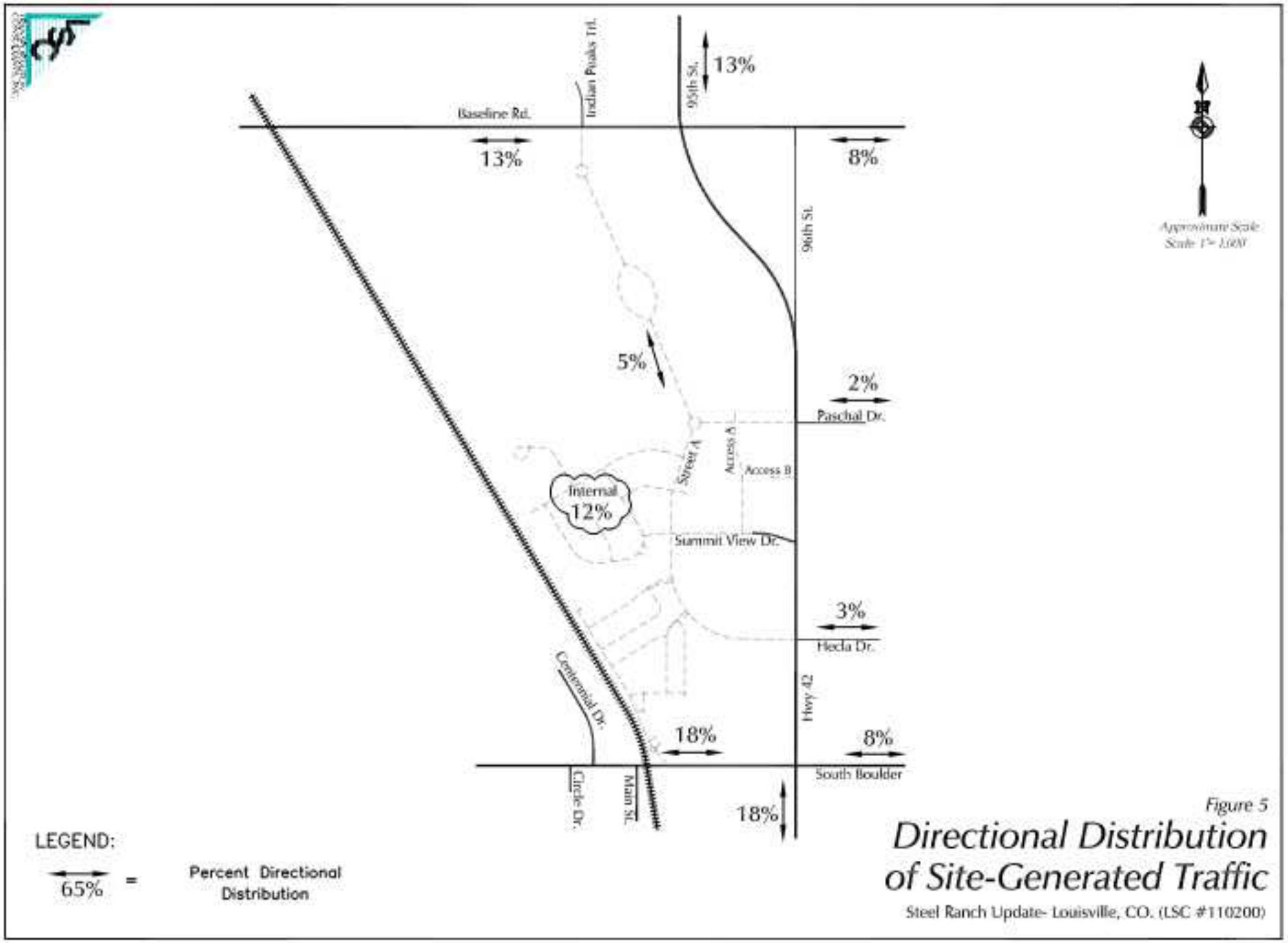


Figure 5

Directional Distribution of Site-Generated Traffic

Steel Ranch Update- Louisville, CO. (LSC #110200)

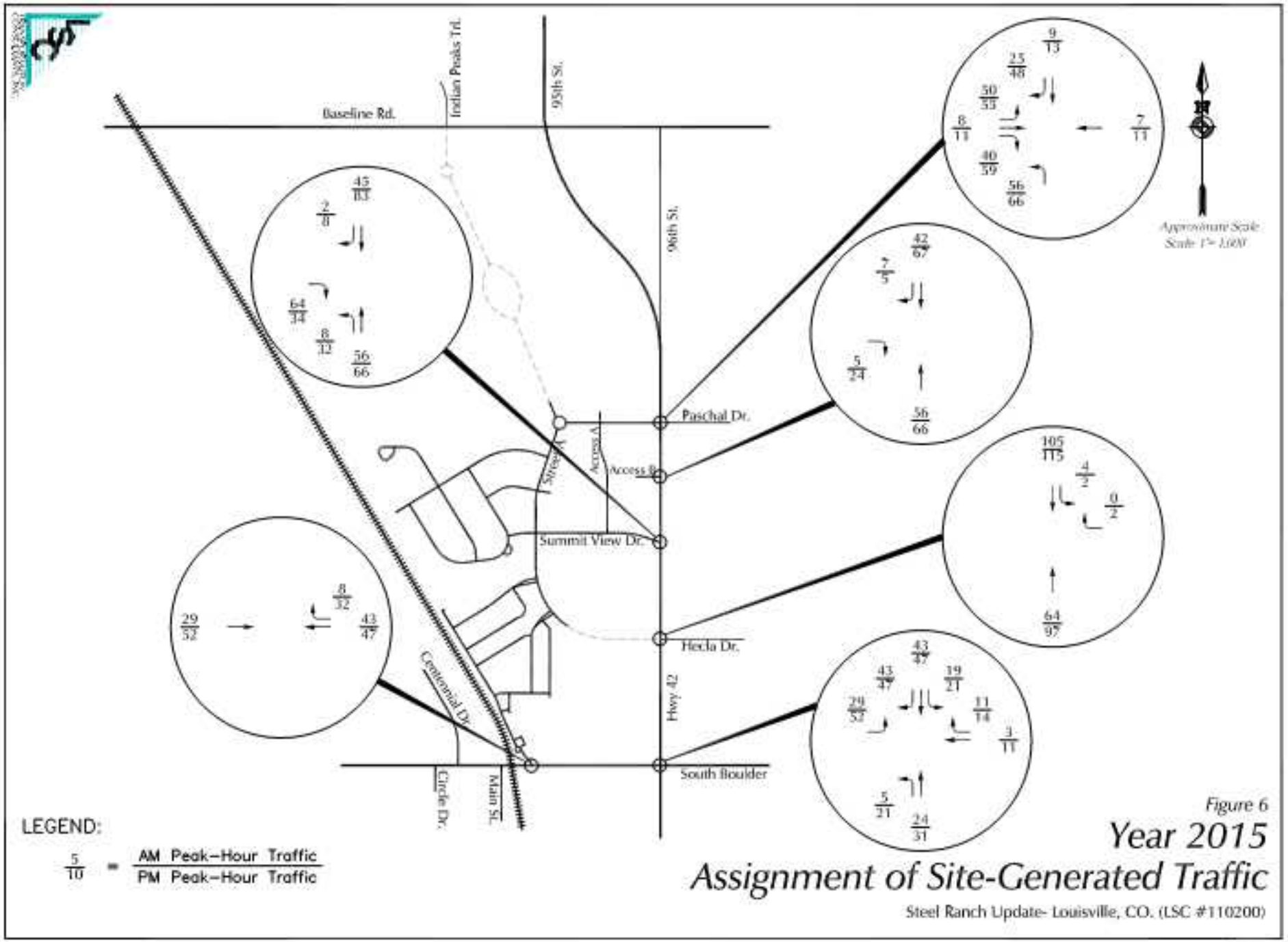


Figure 6

Year 2015

Assignment of Site-Generated Traffic

Steel Ranch Update- Louisville, CO. (LSC #110200)

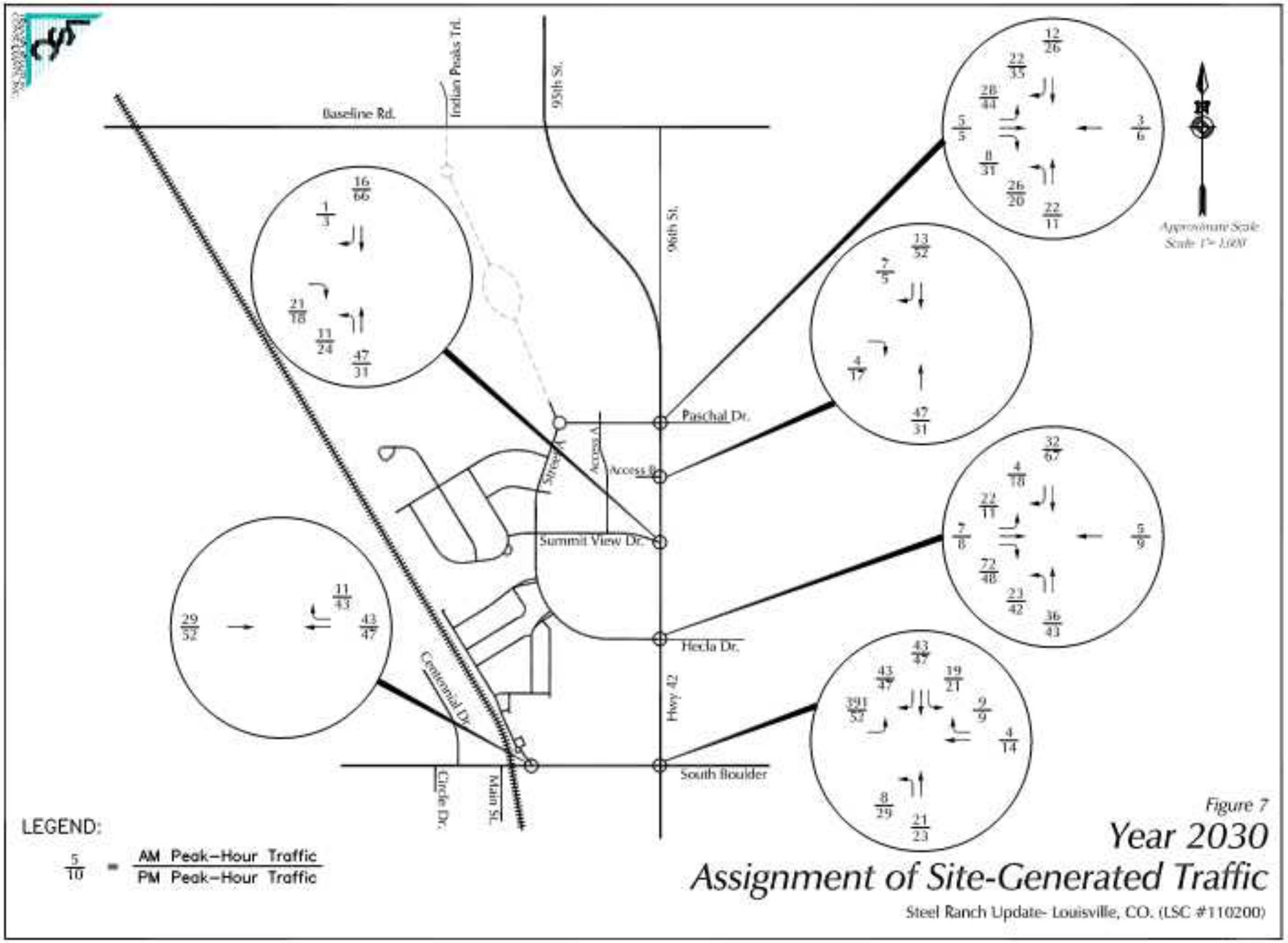


Figure 7

Year 2030

Assignment of Site-Generated Traffic

Steel Ranch Update- Louisville, CO. (LSC #110200)

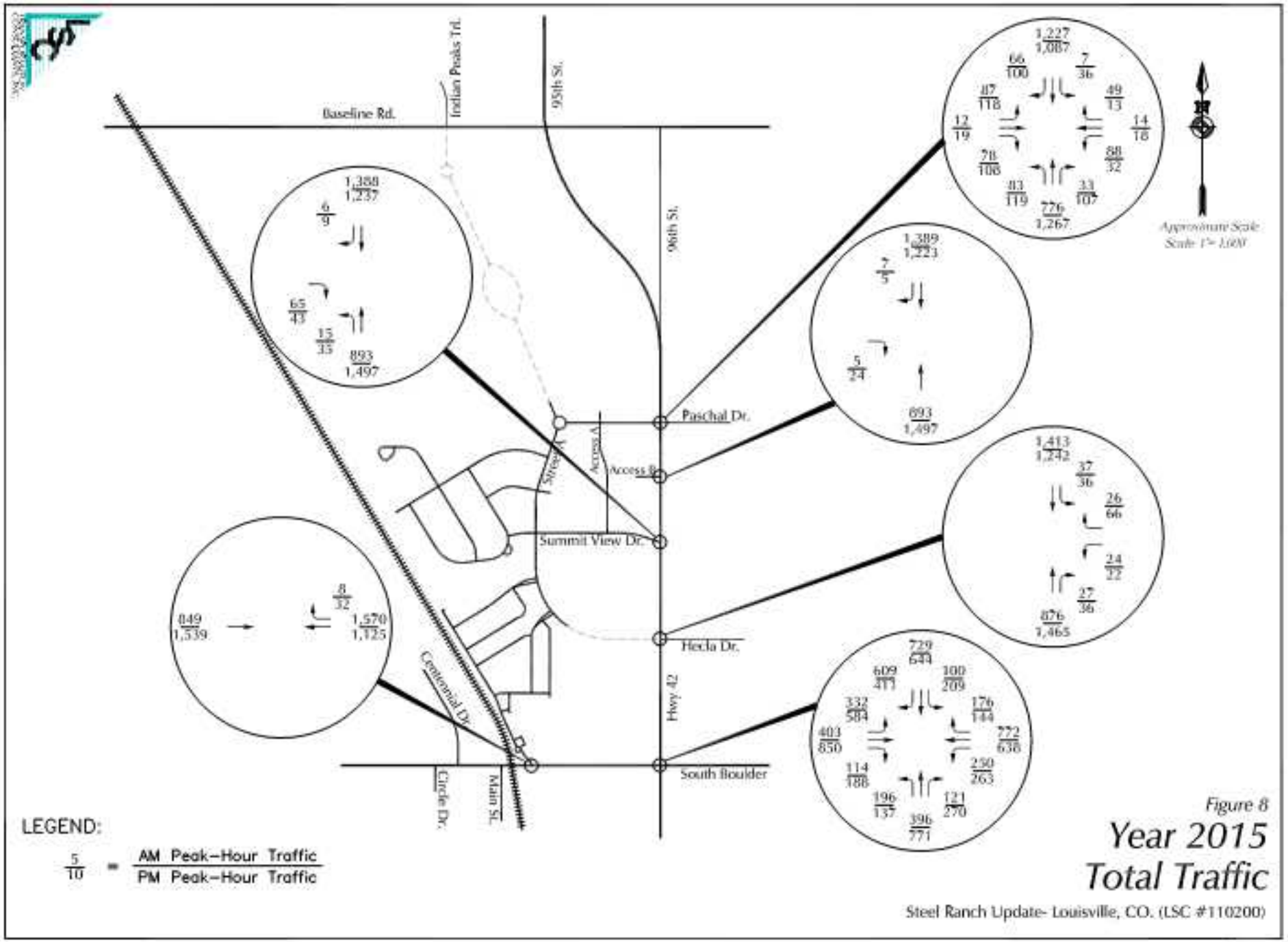


Figure 8

Year 2015 Total Traffic

Steel Ranch Update- Louisville, CO. (LSC #110200)

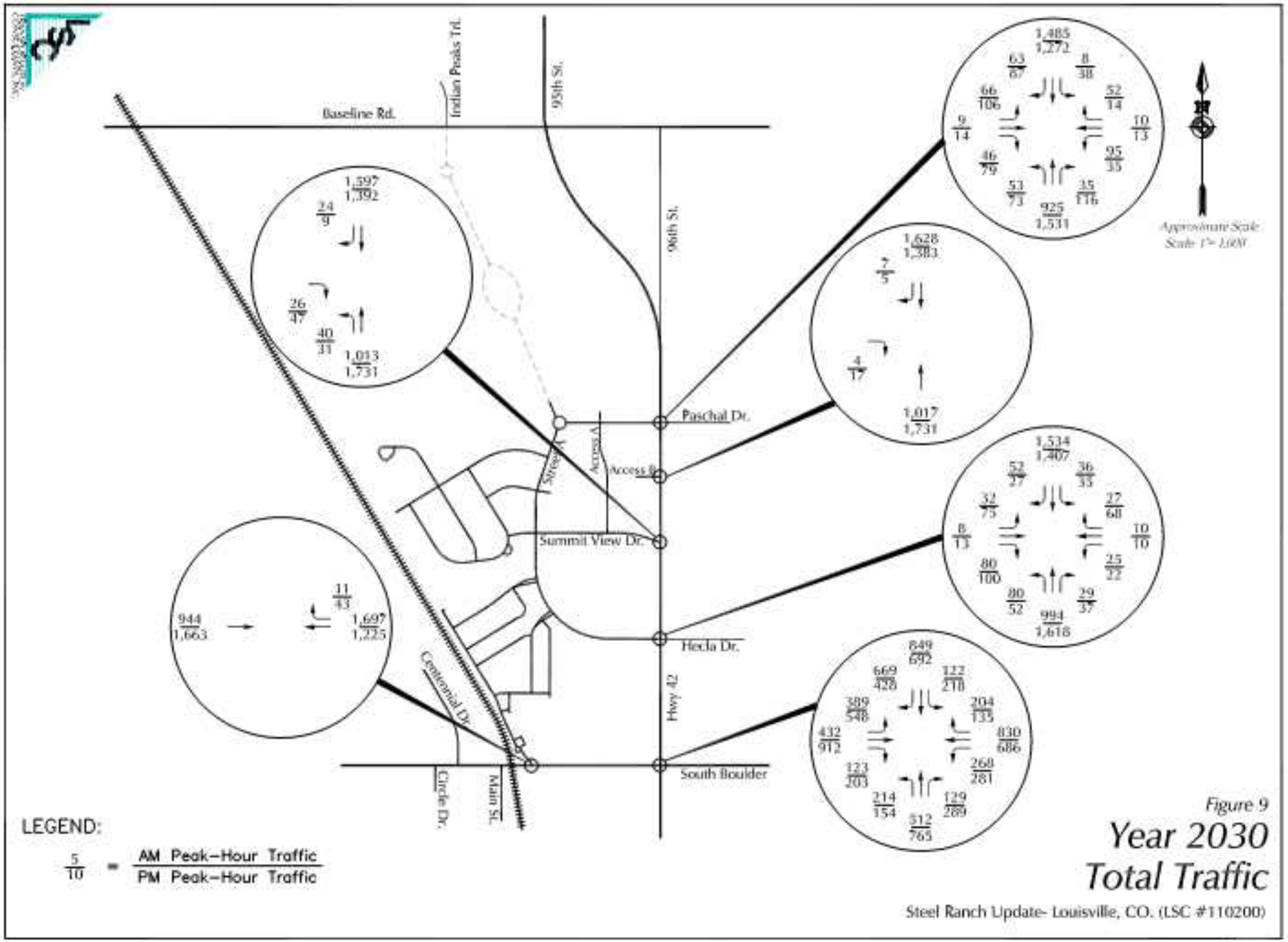


Figure 9

Year 2030 Total Traffic

Steel Ranch Update- Louisville, CO. (LSC #110200)

SECTION F
Traffic Impacts

Traffic impacts in this analysis have been quantified in terms of total average weekday traffic (AWDT) and Levels of Service (LOS) at major intersections during the AM and PM peak-hours. Total traffic is the sum of site-generated traffic and "background" traffic.

Peak-Hour Intersection Level of Service Analysis

Traffic impacts associated with the proposed Steel Ranch development are best described in terms of the resulting effects they have on the major intersections that serve the proposed development. There are five major intersections affected by the proposed Steel Ranch development, including SH 42/Paschal Drive, SH 42/Access B, SH 42/Summit View Drive, SH 42/Hecla Drive, and SH 42/South Boulder Road.

Based upon the Year 2015 and Year 2030 AM and PM peak-hour background and total traffic volumes shown in Figures 3, 4, 8, and 9, "Signalized and Unsignalized Intersection Capacity" analyses have been performed, using procedures set forth in the 2000 *Highway Capacity Manual*. Lane geometry is shown in Figure 10, with SH 42 as two lanes in 2015 and assumed to be widened to four lanes in 2030. The concept of Level of Service (LOS) is used as a basis for computing combinations of roadway operating conditions. By definition, six different Levels of Service are used (A, B, C, D, E, and F) with "A" being a free-flow condition and "E" representing the "capacity" of a given intersection or traffic movement. Analyses have been performed for the AM and PM peak-hour future years plus traffic generated by the proposed development. The summary results of the Level of Service analyses are shown in Table 2 and the complete analysis printouts are contained in Appendix B.

- SH 42/Paschal Drive: The fourth leg of this existing unsignalized intersection was recently constructed. This intersection is currently controlled by east- and west-facing Stop signs on Paschal Drive and is located approximately one-half mile north of the SH 42/South Boulder Road intersection. The intersection will operate at a poor Level of Service (LOS "F") with and without the addition of site-generated traffic during the morning and evening morning peak-hour by 2015. Signalization will improve the operation to a good Level of Service (LOS "C" or

better) both with and without the addition of site-generated traffic during the morning and evening peak-hours through the Year 2030.

This intersection has been planned to be signalized through an intergovernmental agreement between the City of Louisville, Boulder County and CDOT, dated May, 1991. Funding for the new traffic signal was established through an intergovernmental agreement between Louisville and Lafayette in 2007. A traffic signal warrant study was performed at this intersection for the Year 2015 morning and evening peak-hour background plus site-generated traffic volumes with the results contained in Appendix C. The analysis shows that this intersection is expected to meet the MUTCD peak-hour signal warrant with total 2015 traffic during the morning and evening peak-hours.

- SH 42/South Boulder Road: This signalized intersection is expected to operate at an acceptable Level of Service (LOS "D" or better) through Year 2030 with or without the addition of site-generated traffic.

- SH 42/Hecla Drive: In the short term, this existing unsignalized intersection is expected to operate at a poor Level of Service (LOS "F") with and without the addition of site-generated traffic. The expected Level of Service will improve upon signalization of this intersection to an excellent Level of Service (LOS "A") during the morning peak-hour and a very good Level of Service (LOS "B" or better) during the evening peak-hour with and without site-generated traffic through the Year 2030.

  This intersection is planned to be signalized through an intergovernmental agreement between the City of Louisville, Boulder County and CDOT, dated May, 1991. A traffic signal warrant study was performed at this intersection for the Year 2015 and 2030 morning and evening peak-hour background plus site-generated traffic volumes with the results contained in Appendix C. The analysis shows that this intersection will nearly meet the MUTCD peak-hour signal warrant during the Year 2030 morning and evening peak-hours. Future observation of this intersection will be required.

- SH 42/Summit View Drive: This unsignalized intersection is recommended for 3/4 operation (eastbound left-turn restricted). It will operate at a poor Level of Service (LOS "F") during the morning peak-hour until SH 42 is widened to four lanes at which time it will operate at a good Level of Service (LOS "C") or better during both morning and evening peak-hours through the Year 2030.

- SH 42/Access B: This proposed right-in/right-out access will operate at an acceptable Level of Service (LOS "D") until SH 42 is widened to four lanes at which time it will operate at a good Level of Service (LOS "C" or better) during both morning and evening peak-hours through the Year 2030.

Average Daily Traffic and Lane Geometry Recommendations

The overall average weekday traffic impacts of the proposed Steel Ranch development are shown in Figure 11. In this figure, the proposed Steel Ranch development traffic is shown as an increment of Year 2030 total average weekday traffic (AWDT) and is compared with expected Year 2030 roadway capacity.

SH 42, Paschal Drive, and Hecla Drive are expected to remain below their proposed daily capacities through the Year 2030. The capacities shown are based on the recommended traffic control and lane geometry illustrated in Figure 10.

Table 2
Intersection Level of Service
Steel Ranch South
Louisville, Colorado
(LSC #110200; November, 2011)

Traffic Control	Intersection Location	Year 2015 Background Traffic Level of Service AM	Year 2015 Background Traffic Level of Service PM	Year 2015 Total Traffic Level of Service AM	Year 2015 Total Traffic Level of Service PM	Year 2030 Background Traffic Level of Service AM	Year 2030 Background Traffic Level of Service PM	Year 2030 Total Traffic Level of Service AM	Year 2030 Total Traffic Level of Service PM
Unsignalized	SH 42/Paschal Drive								
	Eastbound Approach	D	F	F	F	F	F	F	F
	Westbound Approach	F	F	F	F	F	F	F	F
	Northbound Through/Left	B	B	B	B	C	B	C	B
	Southbound Left	A	B	A	B	B	C	B	C
	Critical Movement Delay (sec /veh)	*	*	*	*	*	*	*	*
Signalized	SH 42/South Boulder Road								
	Eastbound Left	D	D	D	E	D	D	D	D
	Eastbound Through/Right	C	D	C	D	C	E	C	E
	Westbound Left	D	E	D	E	D	F	D	F
	Westbound Through	D	D	D	D	D	D	D	D
	Westbound Right	C	C	C	C	C	C	C	C
	Northbound Left	D	D	D	D	D	D	D	D
	Northbound Through/Right	C	D	C	D	C	D	C	E
	Southbound Left	D	F	D	F	D	E	D	F
	Southbound Through	C	C	D	C	C	C	D	C
	Southbound Right	A	A	A	A	A	A	A	A
	Entire Intersection Delay (sec /veh)	29.6	42.5	30.3	46.0	32.8	47.4	33.8	49.9
	Entire Intersection LOS	C	D	C	D	C	D	C	D
Unsignalized	SH 42/Hecla Drive								
	Eastbound Approach	-	-	-	-	F	F	F	F
	Westbound Approach	F	F	F	F	F	F	F	F
	Northbound Left	-	-	-	-	C	B	C	B
	Southbound Left	B	C	B	D	B	C	B	C
	Critical Movement Delay(sec /veh)	*	*	*	*	*	*	*	*
Unsignalized	SH 42/Summit View Drive								
	Eastbound Approach	D	C	F	D	C	C	C	C
	Northbound Left	B	B	B	B	C	B	C	B
	Critical Movement Delay (sec /veh)	28.1	22.9	50.0	31.1	17.5	16.7	18.8	17.1
Unsignalized	SH 42/Access B								
	Eastbound Approach	-	-	D	D	-	-	C	C
	Critical Movement Delay (sec /veh)	-	-	30.3	27.0	-	-	17.7	15.8
MITIGATED									
Signalized	SH 42/Paschal Drive								
	Eastbound Left	-	-	D	D	-	-	D	C
	Eastbound Through/Right	-	-	D	D	-	-	D	C
	Westbound Left	-	-	E	D	-	-	D	C
	Westbound Through	-	-	D	D	-	-	D	C
	Westbound Right	-	-	D	D	-	-	A	A
	Northbound Left	-	-	A	D	-	-	A	B
	Northbound Through/Right	-	-	A	A	-	-	A	A
	Southbound Left	-	-	A	C	-	-	A	A
	Southbound Through	-	-	C	C	-	-	A	A
	Southbound Right	-	-	A	A	-	-	A	A
	Entire Intersection Delay (sec /veh)	-	-	25.1	33.2	-	-	11.2	10.7
	Entire Intersection LOS	-	-	C	C	-	-	B	B
Signalized	SH 42/Hecla Drive								
	Eastbound Through/Left	-	-	-	-	-	-	D	C
	Eastbound Right	-	-	-	-	-	-	D	C
	Westbound Through/Left	-	-	-	-	-	-	D	C
	Westbound Right	-	-	-	-	-	-	D	C
	Northbound Left	-	-	-	-	-	-	A	A
	Northbound Through	-	-	-	-	-	-	A	B
	Northbound Right	-	-	-	-	-	-	A	A
	Southbound Left	-	-	-	-	-	-	A	A
	Southbound Through	-	-	-	-	-	-	A	A
	Southbound Right	-	-	-	-	-	-	A	A
	Entire Intersection Delay (sec /veh)	-	-	-	-	-	-	8.1	11.0
	Entire Intersection LOS	-	-	-	-	-	-	A	B

Note:
* Delay more than 100 seconds.

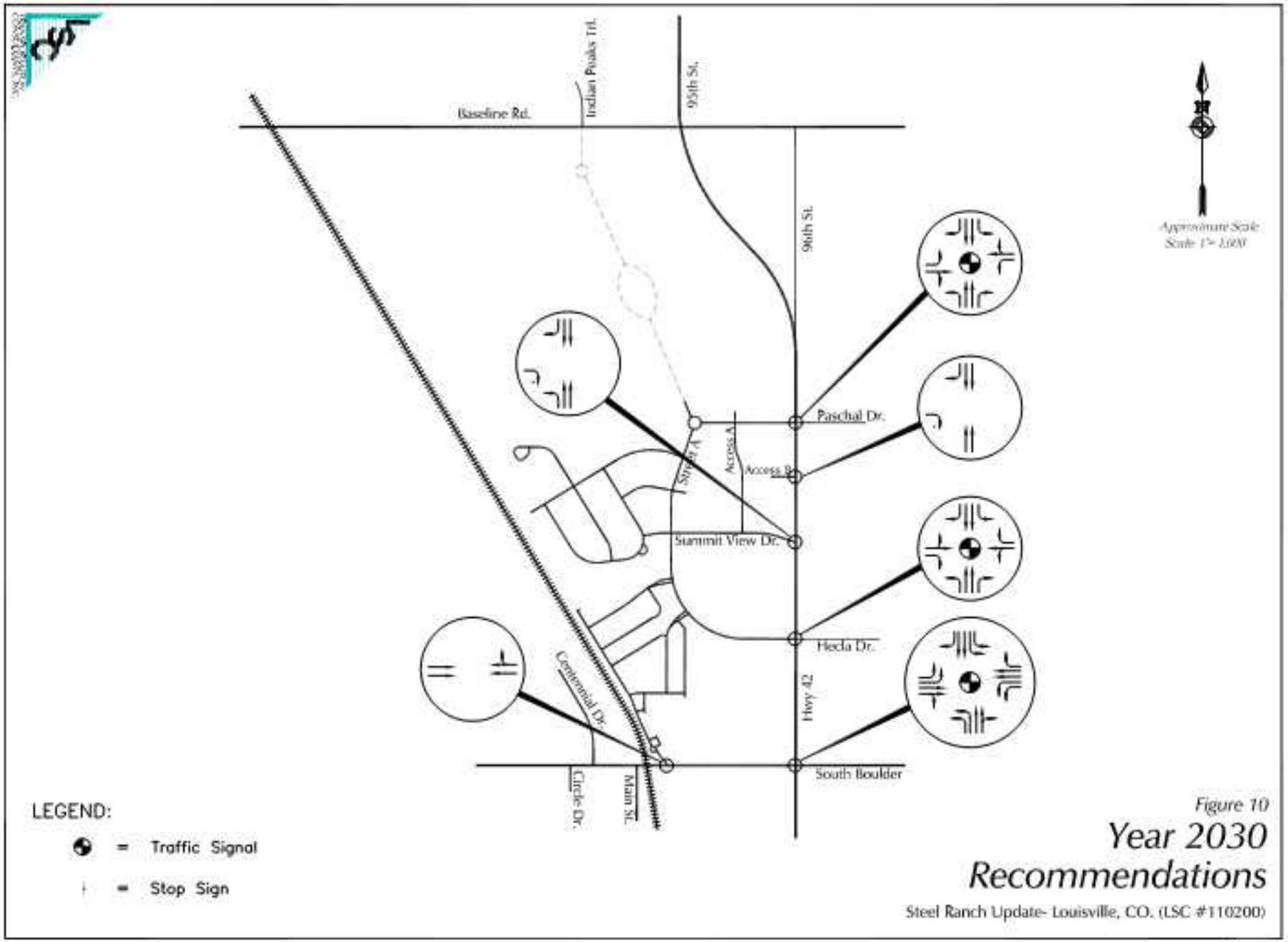


Figure 10

Year 2030 Recommendations

Steel Ranch Update- Louisville, CO. (LSC #110200)

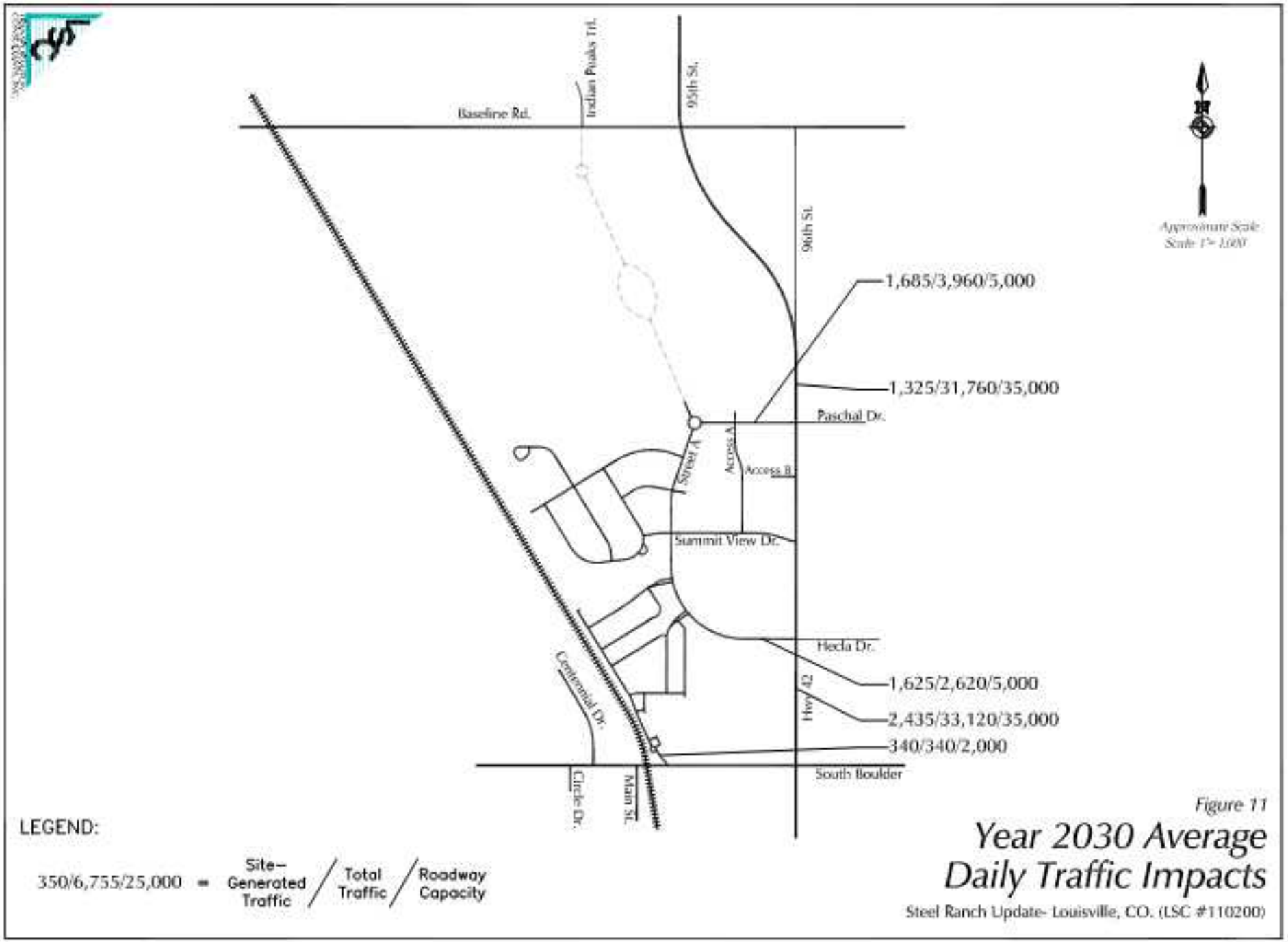


Figure 11

Year 2030 Average Daily Traffic Impacts

Steel Ranch Update- Louisville, CO. (LSC #110200)

SECTION G
Access Recommendations

Queue Length Analysis

The 95th percentile queue lengths were estimated at the SH 42 intersections with Paschal Drive and Hecla Drive, with the results displayed in Table 3. The simulation program SimTraffic was run three times for 60 minutes each during the AM and PM peak-hour volumes, with results being the average of the three runs. The SimTraffic reports are included in Appendix D. Table 3 includes existing lane lengths and recommended lane lengths.

SH 42/Paschal Drive

Figure 12 illustrates the recommended layout for Paschal Drive. The layout will serve both Indian Peaks to the north and Steel Ranch to the south and will be sufficient given the current proposed land use information.

As stated previously in this report, SH 42 is classified as a Non-Rural Principal Highway (NR-A) roadway in the May, 2002 *CDOT Access Category Assignment Schedule*. The following summarizes the auxiliary turn lanes required.

The intersection of SH 42/Paschal Drive will require a northbound left-turn lane with a length of 515 feet (including 165 feet of taper), a southbound right-turn lane with length of 435 feet (including 165 feet of taper) and a eastbound right-to-southbound through acceleration lane with a length of 565 feet (including 165 feet of taper). The acceleration lane should be constructed as a continuous right-turn lane connecting to Access B. Most of these improvements, except for the additional northbound and southbound through lanes, have been recently constructed.

South Boulder Road/Right-In Access

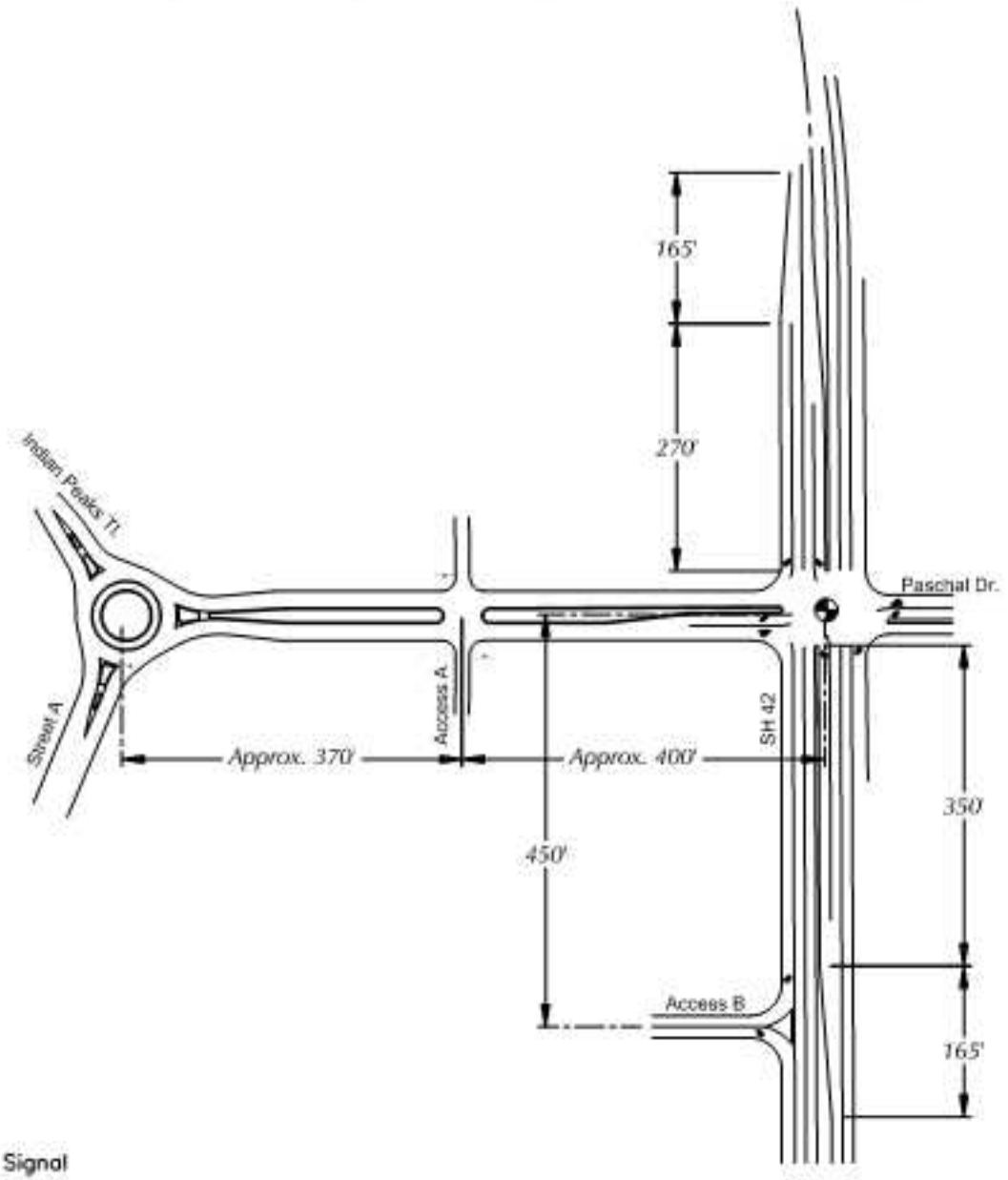
This access is intended to serve emergency vehicles and right-turns-in. It should be designed to prohibit right-turns-out since it is located too close to the South Boulder Road/Main Street intersection and the railroad crossing.

Table 3
Queuing Analysis[1][2]
Steel Ranch
Louisville, CO
(LSC #110200; November, 2011)

Intersections	Control	2015 [4] Existing Roadway Geometry: 2015 Total AM SimTraffic 95% Queue (feet)	2015 [4] Existing Roadway Geometry: 2015 Total PM SimTraffic 95% Queue (feet)	2030 [5] Proposed Roadway Geometry: 2030 Total AM SimTraffic 95% Queue (feet)	2030 [5] Proposed Roadway Geometry: 2030 Total PM SimTraffic 95% Queue (feet)	Existing Lane Length	Recommended Lane Length (6)
SH 42/Paschal Drive [4]	Signal						
NB LT Decel		112	111	65	58	1,600 [3]	515 [7]
SB LT Decel		22	82	15	34	570	485 [7]
EB LT		117	125	88	88	150	150
SH 42/Hecla Drive	Signal						
NB LT Decel		--	--	71	48	[6]	515 [7] [8]
SB LT Decel		--	--	24	34	1,600 [3]	485 [7]

Notes:

(1) For lanes potentially impacted by site traffic. The values are the average from 3 runs.
(2) In SimTraffic the 95% queue is theoretical based on a statistical calculation involving the average and maximum observed queues.
(3) Two-way left-turn lane exists on SH 42 between Paschal Drive and Hecla Drive.
(4) Assumes traffic signal and one lane in each direction on SH 42.
(5) Assumes traffic signal and two lanes in each direction on SH 42.
(6) NB left-turn lane does not currently exist, but a 100-foot lane could be striped.
(7) Includes 165-foot taper.
(8) There may be a conflict with the southbound 3/4 access at the shopping center.



Approximate Scale
Scale 1"= 200'

LEGEND:

● = Traffic Signal

┼ = Stop Sign

Figure 12

SH 42/Paschal Drive Recommendations

Steel Ranch Update- Louisville, CO. (LSC #110200)

SECTION H
Summary

Based upon the foregoing analysis, the following conclusions may be made regarding the proposed Steel Ranch development:

1. When completed, the proposed Steel Ranch development is planned to contain about 152 single-family detached dwelling units, 86 single-family attached dwelling units, 220 apartments, and 104,000 square feet of office/commercial space.

2. At buildout, the proposed development will generate about 6,294 external daily vehicle-trips with approximately 3,147 vehicles entering and 3,147 vehicles exiting during an average weekday. Of these, 398 vehicle-trips (160 entering and 238 exiting the site) will occur during the morning peak-hour, while 553 vehicle-trips will be generated (290 entering and 263 exiting the site) during the evening peak-hour.

3. The directional distribution of site-generated traffic will be oriented 13% from the north on SH 42; 13% from the west on Baseline Road; 8% from the east on Baseline Road; 18% percent from the west on South Boulder Road; 18% from the south on SH 42; 8% percent from the east on South Boulder Road; 5% from Indian Peaks, Parcel S via Paschal Drive; 2% from the east on Paschal Drive; 3% from the shopping center located south and east of the site; and 12% will remain internal to the site.

4. Existing SH 42, with one lane in each direction plus recommended turn lanes, will accommodate traffic expected from Steel Ranch through 2015. As shown in the *SH 42 Traffic and Access Study*, SH 42 should be widened to a four-lane roadway by 2030.

5. By the Year 2030, all of the intersections are expected to operate at an acceptable Level of Service based on the recommended lane geometry and traffic control devices depicted in Figure 11.

6. The SH 42/Hecla Drive and SH 42/Paschal Drive intersections are recommended to be signalized and should be improved when MUTCD signal warrants are met. Buildout of the Steel Ranch residential development combined with buildout of the North End development in Louisville should put the SH 42/Paschal Drive intersection above the MUTCD peak-hour traffic signal warrant.

7. The access onto South Boulder Road should be designed to allow right-turns-in but prohibit right-turns-out.

8. Traffic impacts associated with the proposed Steel Ranch development can be accommodated by the existing roadway network with the improvements recommended in this report.

APPENDIX A

Traffic Counts

Counter Measures

Site Code : 2
N/S STREET: SH-42
E/W STREET: S BOULDER RD
: :

PAGE: 1
FILE: SH42BOUL

Movements by: Vehicles

DATE: 2/08/05

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
6:30	30	49	3	14	55	27	9	34	9	13	20	29	292
6:45	54	100	13	10	81	29	18	39	17	13	49	18	441
HR TOTAL	84	149	16	24	136	56	27	73	26	26	69	47	733
7:00 AM	70	103	11	21	98	26	19	49	27	13	60	37	534
7:15	78	120	30	26	131	34	26	82	32	24	84	50	717
7:30	95	105	13	54	194	43	22	84	42	23	86	55	816
7:45	155	147	15	29	181	71	22	87	49	23	86	69	934
HR TOTAL	398	475	69	130	604	174	89	302	150	83	316	211	3001
8:00 AM	119	127	13	39	160	52	29	96	47	28	78	97	885
8:15	118	118	16	32	168	51	23	101	45	35	106	91	904
Break													
4:00 PM	63	95	18	12	138	55	44	77	24	24	142	99	791
4:15	53	82	28	17	111	42	62	92	27	28	148	103	793
4:30	54	80	30	14	139	56	72	97	25	32	159	84	842
4:45	61	86	28	22	115	68	61	95	25	32	183	84	860
HR TOTAL	231	343	104	65	503	221	239	361	101	116	632	370	3286
5:00 PM	65	88	30	20	155	45	55	111	26	38	179	100	912
5:15	71	115	38	16	137	52	57	147	30	53	223	123	1062
5:30	102	116	40	25	143	53	53	139	30	57	179	107	1044
5:45	59	113	21	18	119	36	44	93	18	31	125	60	737
HR TOTAL	297	432	129	79	554	186	209	490	104	179	706	390	3755
DAY TOTAL	1247	1644	347	369	2125	740	616	1423	473	467	1907	1206	12564

Counter Measures

Site Code : 2
N/S STREET: SH-42
E/W STREET: S BOULDER RD
: :

PAGE: 1
FILE: SH42BOUL

Movements by: Vehicles

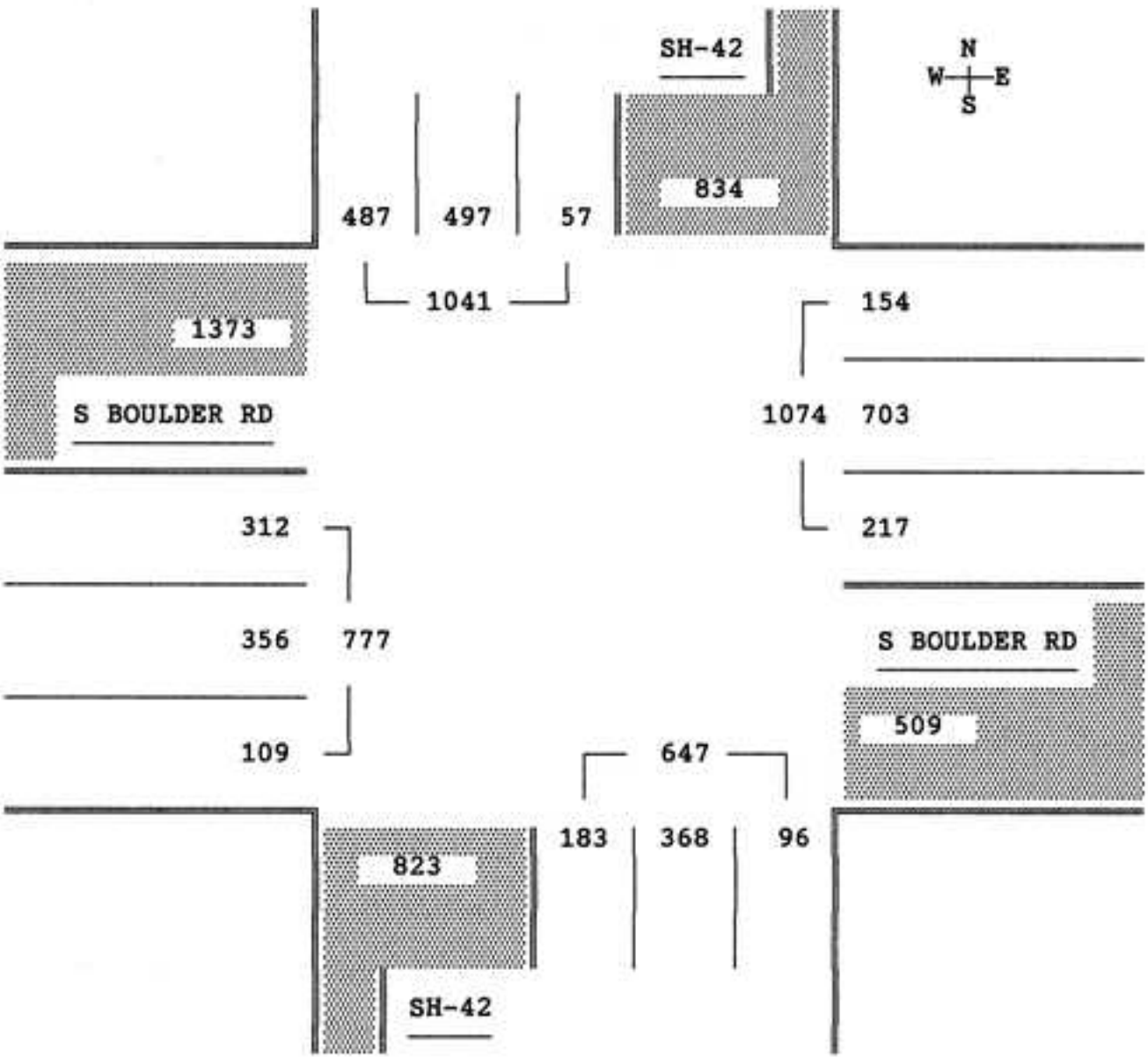
DATE: 2/08/05

PEAK PERIOD ANALYSIS FOR THE PERIOD: 6:30 AM - 8:30 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	..... VOLUMES ..... Right	Thru	Left	Total	.... PERCENTS ... Right	Thru	Left
North	7:30 AM	0.82	487	497	57	1041	47	48	5
East	7:30 AM	0.92	154	703	217	1074	14	65	20
South	7:30 AM	0.94	96	368	183	647	15	57	28
West	7:30 AM	0.84	109	356	312	777	14	46	40

Entire Intersection

North	7:30 AM	0.82	487	497	57	1041	47	48	5
East		0.92	154	703	217	1074	14	65	20
South		0.94	96	368	183	647	15	57	28
West		0.84	109	356	312	777	14	46	40



Counter Measures

Site Code : 2
N/S STREET: SH-42
E/W STREET: S BOULDER RD
: :

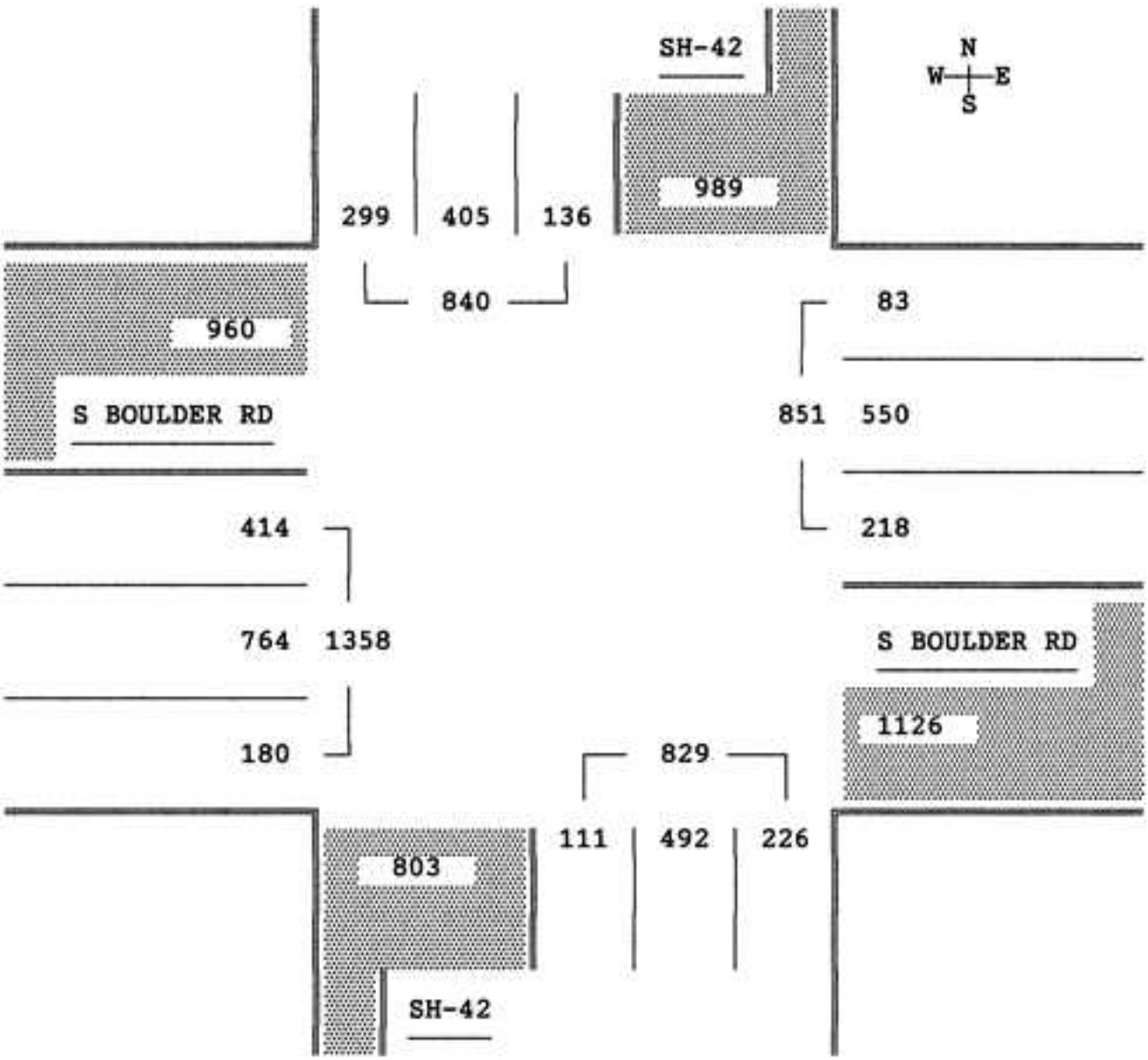
PAGE: 1
FILE: SH42BOUL

Movements by: Vehicles

DATE: 2/08/05

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.83	297	432	129	858	35	50	15
East	4:45 PM	0.96	83	550	218	851	10	65	26
South	4:45 PM	0.89	226	492	111	829	27	59	13
West	4:45 PM	0.85	180	764	414	1358	13	56	30
Entire Intersection									
North	4:45 PM	0.81	299	405	136	840	36	48	16
East		0.96	83	550	218	851	10	65	26
South		0.89	226	492	111	829	27	59	13
West		0.85	180	764	414	1358	13	56	30



Counter Measures

Site Code : 5
N/S STREET: COURTESY RD
E/W STREET: PASCHAL DR
CITY/CNTY : LOUISVILLE/BOULD

PAGE: 1
FILE: COURPASC

Movements by: Vehicles

DATE: 12/19/06

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
6:30	0	99	2	4	0	4	1	60	0	0	0	0	170
6:45	0	164	3	5	0	10	5	79	0	0	0	0	266
HR TOTAL	0	263	5	9	0	14	6	139	0	0	0	0	436
7:00 AM	0	195	4	11	0	13	2	101	0	0	0	0	326
7:15	0	243	2	7	0	18	3	134	0	0	0	0	407
7:30	0	271	1	8	0	18	7	159	0	0	0	0	464
7:45	0	319	1	13	0	17	4	154	0	0	0	0	508
HR TOTAL	0	1028	8	39	0	66	16	548	0	0	0	0	1705
8:00 AM	0	240	1	6	0	12	10	199	0	0	0	0	468
8:15	0	246	1	9	0	18	6	153	0	0	0	0	433
Break													
4:00 PM	0	189	4	2	0	6	17	242	0	0	0	0	460
4:15	0	191	2	5	0	8	21	242	0	0	0	0	469
4:30	0	215	9	0	0	8	22	247	0	0	0	0	501
4:45	0	213	5	1	0	8	13	242	0	0	0	0	482
HR TOTAL	0	808	20	8	0	30	73	973	0	0	0	0	1912
5:00 PM	0	236	5	1	0	4	28	262	0	0	0	0	536
5:15	0	241	2	3	0	5	21	307	0	0	0	0	579
5:30	0	212	12	2	0	4	21	274	0	0	0	0	525
5:45	0	195	10	1	0	10	19	224	0	0	0	0	459
HR TOTAL	0	884	29	7	0	23	89	1067	0	0	0	0	2099
DAY TOTAL	0	3469	64	78	0	163	200	3079	0	0	0	0	7053

Counter Measures

Site Code : 5
N/S STREET: COURTESY RD
E/W STREET: PASCHAL DR
CITY/CNTY : LOUISVILLE/BOULD

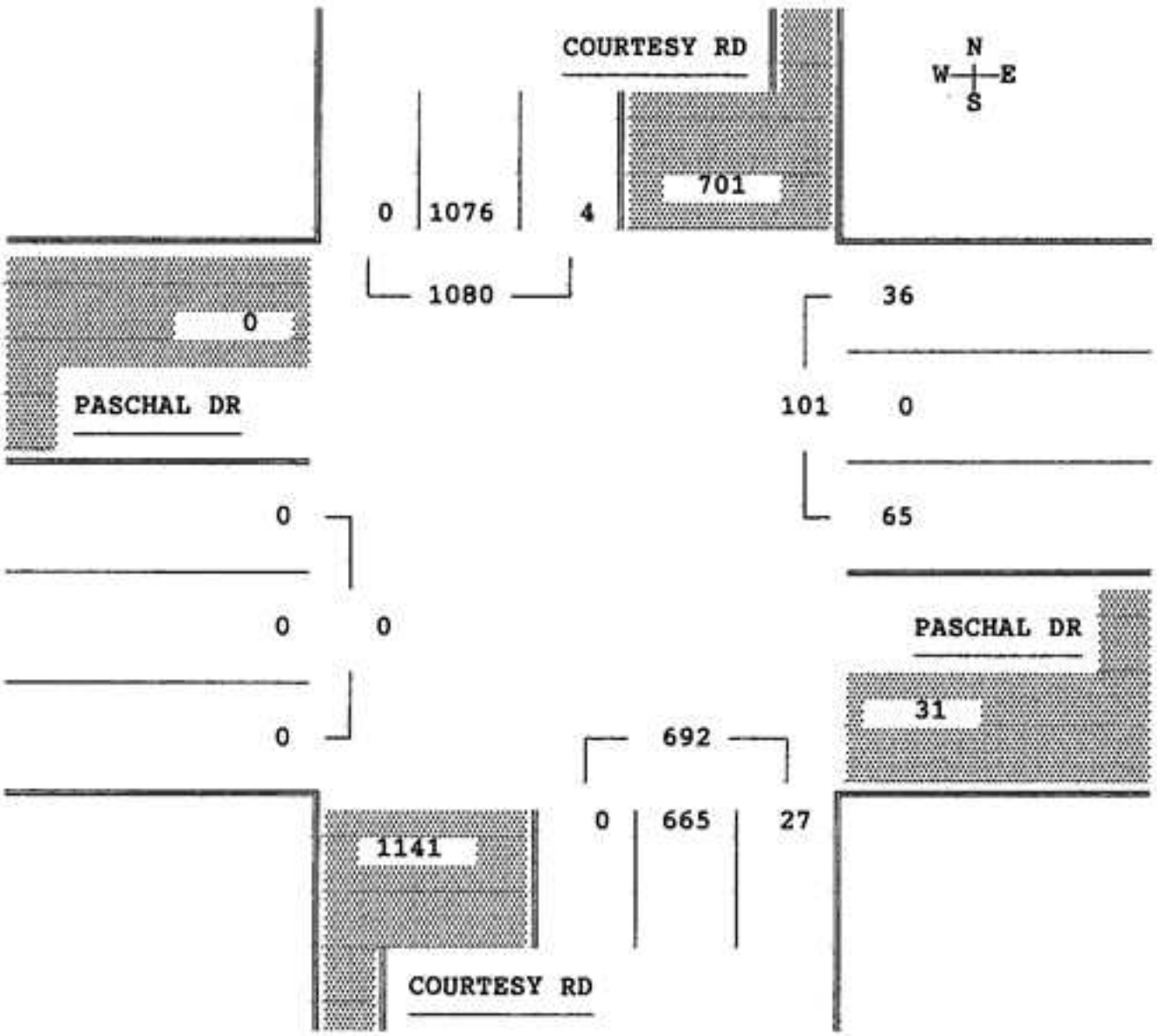
PAGE: 1
FILE: COURPASC

Movements by: Vehicles

DATE: 12/19/06

PEAK PERIOD ANALYSIS FOR THE PERIOD: 6:30 AM - 8:30 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:30 AM	0.84	0	1076	4	1080	0	%100	0
East	7:00 AM	0.88	39	0	66	105	37	0	63
South	7:30 AM	0.83	27	665	0	692	4	96	0
West	7:30 AM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	7:30 AM	0.84	0	1076	4	1080	0	%100	0
East		0.84	36	0	65	101	36	0	64
South		0.83	27	665	0	692	4	96	0
West		0.00	0	0	0	0	0	0	0



Counter Measures

Site Code : 5
N/S STREET: COURTESY RD
E/W STREET: PASCHAL DR
CITY/CNTY : LOUISVILLE/BOULD

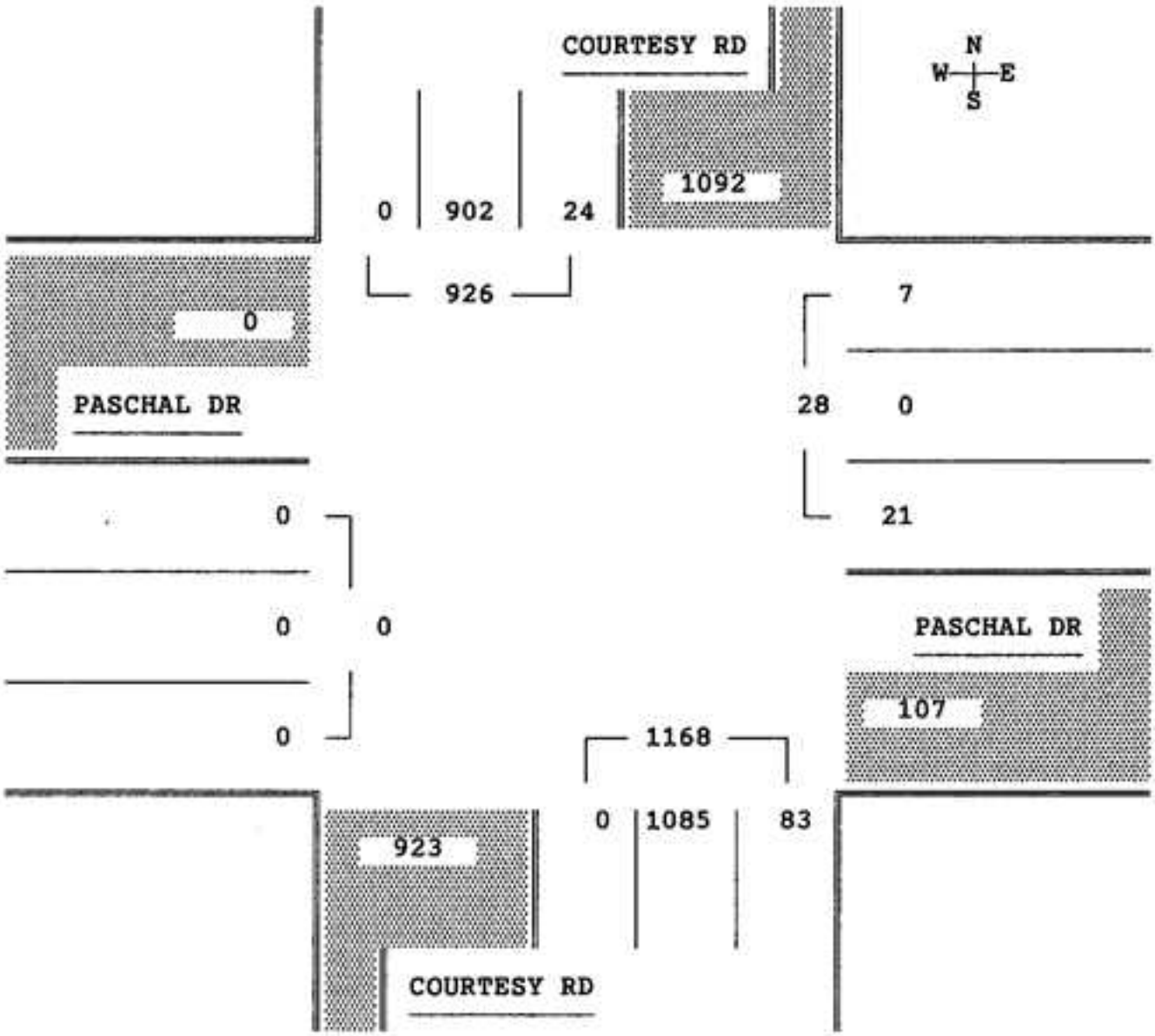
PAGE: 1
FILE: COURPASC

Movements by: Vehicles

DATE: 12/19/06

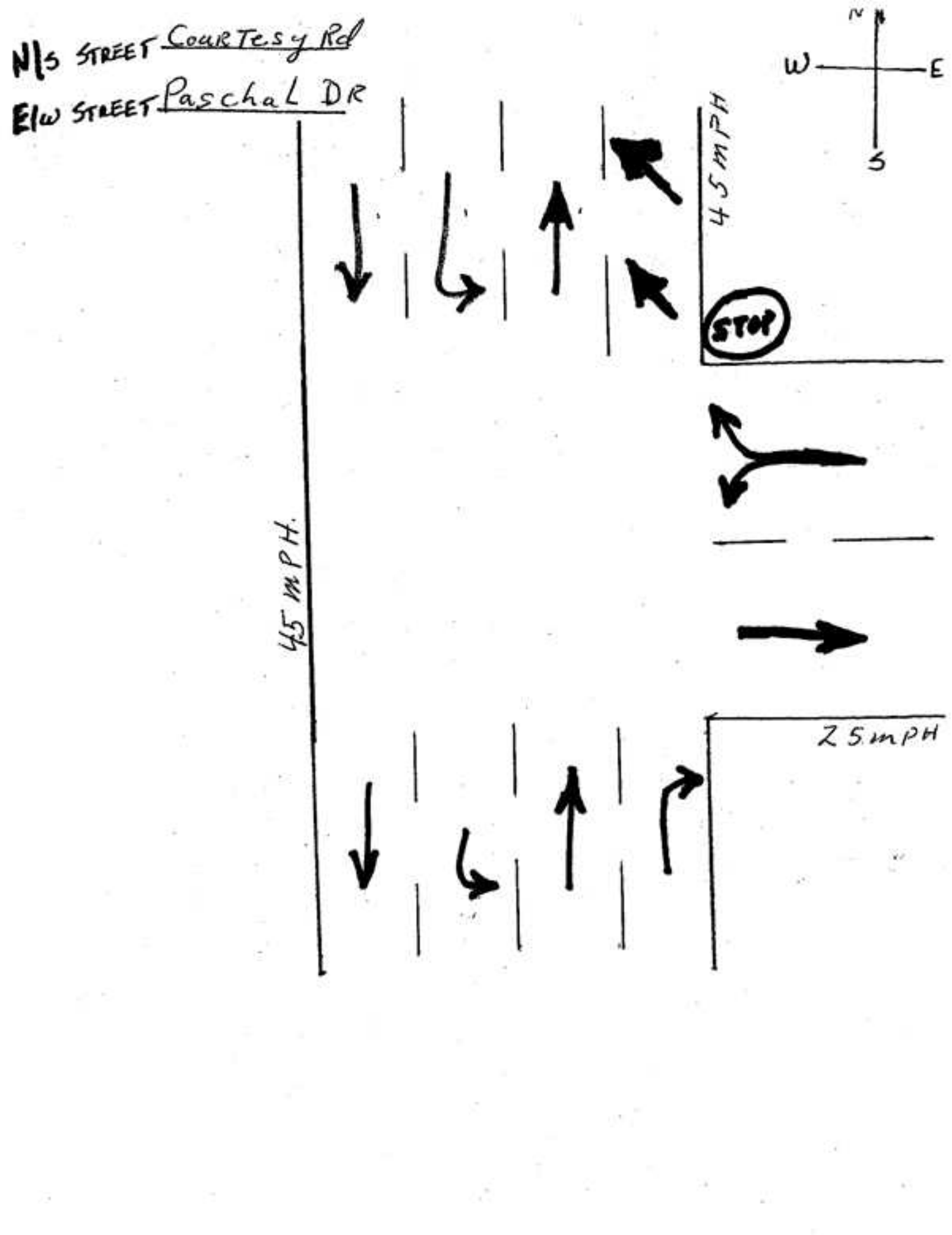
PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	4:30 PM	0.95	0	905	21	926	0	98	2
East	4:00 PM	0.73	8	0	30	38	21	0	79
South	4:45 PM	0.89	83	1085	0	1168	7	93	0
West	4:45 PM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	4:45 PM	0.95	0	902	24	926	0	97	3
East		0.78	7	0	21	28	25	0	75
South		0.89	83	1085	0	1168	7	93	0
West		0.00	0	0	0	0	0	0	0



N/S STREET Courtesy Rd

E/W STREET Paschal DR



Counter Measures

Site Code : 2
N/S STREET: N COURTESY RD
E/W STREET: E HECLA DR
:CITY/CNTY: LOUISVILLE/BOULD

PAGE: 1
FILE: COUTHECL

Movements by: Vehicles

DATE: 12/19/06

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
6:30	0	99	1	1	0	1	1	62	0	0	0	0	165
6:45	0	174	3	3	0	1	2	84	0	0	0	0	267
HR TOTAL	0	273	4	4	0	2	3	146	0	0	0	0	432
7:00 AM	0	207	3	5	0	1	4	99	0	0	0	0	319
7:15	0	251	4	0	0	0	5	142	0	0	0	0	402
7:30	0	287	3	1	0	0	4	159	0	0	0	0	454
7:45	0	323	8	3	0	1	8	162	0	0	0	0	505
HR TOTAL	0	1068	18	9	0	2	21	562	0	0	0	0	1680
8:00 AM	0	255	11	0	0	2	3	209	0	0	0	0	480
8:15	0	248	4	6	0	1	6	147	0	0	0	0	412
Break													
4:00 PM	0	198	10	14	0	6	6	240	0	0	0	0	466
4:15	0	183	8	14	0	5	8	258	0	0	0	0	476
4:30	0	223	5	12	0	7	7	252	0	0	0	0	506
4:45	0	228	5	8	0	4	7	257	0	0	0	0	509
HR TOTAL	0	824	28	48	0	22	28	1007	0	0	0	0	1957
5:00 PM	0	232	3	18	0	2	3	276	0	0	0	0	534
5:15	0	257	4	14	0	2	1	313	0	0	0	0	591
5:30	0	216	3	9	0	3	4	278	0	0	0	0	513
5:45	0	200	7	15	0	0	2	230	0	0	0	0	454
HR TOTAL	0	905	17	56	0	7	10	1097	0	0	0	0	2092
DAY TOTAL	0	3573	82	123	0	36	71	3168	0	0	0	0	7053

Counter Measures

Site Code : 2
N/S STREET: N COURTESY RD
E/W STREET: E HECLA DR
:CITY/CNTY: LOUISVILLE/BOULD

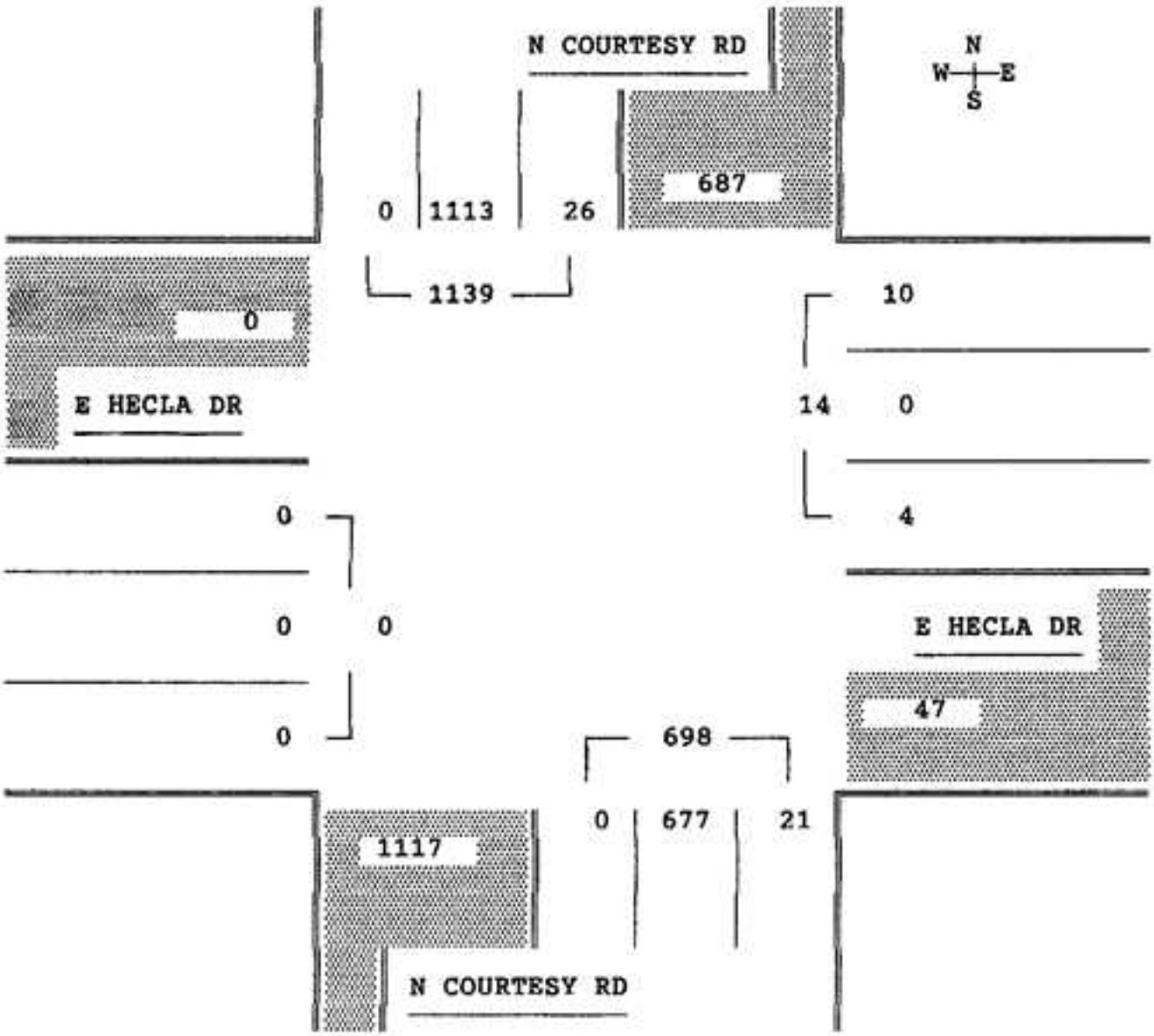
PAGE: 1
FILE: COUTHECL

Movements by: Vehicles

DATE: 12/19/06

PEAK PERIOD ANALYSIS FOR THE PERIOD: 6:30 AM - 8:30 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:15 AM	0.86	0	1116	26	1142	0	98	2
East	7:30 AM	0.50	10	0	4	14	71	0	29
South	7:30 AM	0.82	21	677	0	698	3	97	0
West	7:30 AM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	7:30 AM	0.86	0	1113	26	1139	0	98	2
East		0.50	10	0	4	14	71	0	29
South		0.82	21	677	0	698	3	97	0
West		0.00	0	0	0	0	0	0	0



Counter Measures

Site Code : 2
N/S STREET: N COURTESY RD
E/W STREET: E HECLA DR
:CITY/CNTY: LOUISVILLE/BOULD

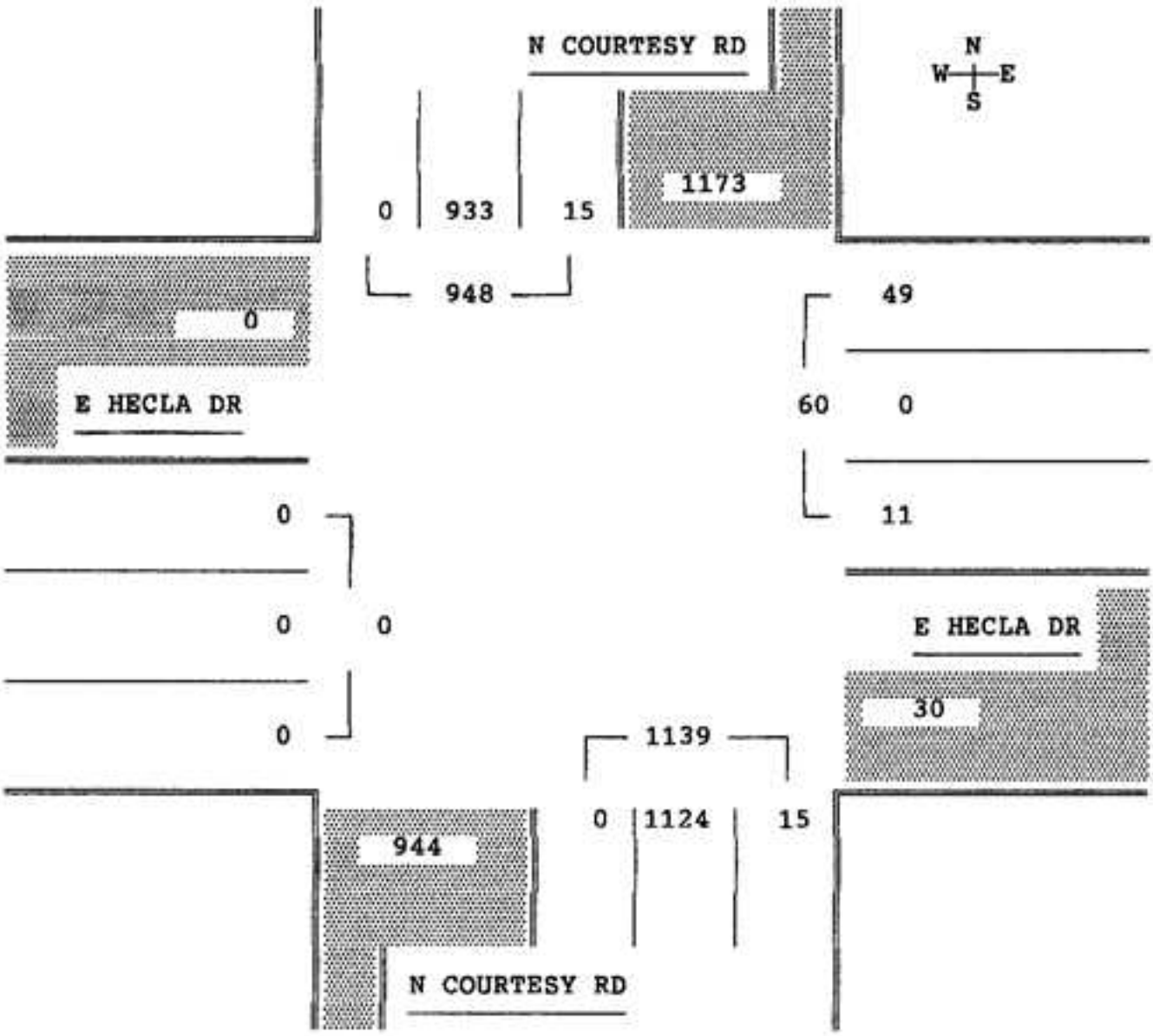
PAGE: 1
FILE: COUTHECL

Movements by: Vehicles

DATE: 12/19/06

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	4:30 PM	0.92	0	940	17	957	0	98	2
East	4:00 PM	0.88	48	0	22	70	69	0	31
South	4:45 PM	0.91	15	1124	0	1139	1	99	0
West	4:45 PM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	4:45 PM	0.91	0	933	15	948	0	98	2
East		0.75	49	0	11	60	82	0	18
South		0.91	15	1124	0	1139	1	99	0
West		0.00	0	0	0	0	0	0	0



N/S STREET N. COURTESY RD

E/W STREET E. HYACINTH DR

COUNTER MEASURES

12-19-2006 *** Weekly Summary For Week Of December 17, 2006 *** 10:07 Pg 1

File: N1206001.PRN Sta: 121857000000 Id: 121857000000 CommId: 01
City/Town: LOUISVILLE County: BOULDER
Location: N COURTESY RD N/O HECLA DR Format: Dir
Lane/s: 1-1
Direction: North

Time	17 Sun	18 Mon	19 Tue	20 Wed	21 Thu	22 Fri	23 Sat	Daily Avg.	Wkday Avg.	Wkend Avg.
01:00	-	-	47	-	-	-	-	47	47	0
02:00	-	-	21	-	-	-	-	21	21	0
03:00	-	-	17	-	-	-	-	17	17	0
04:00	-	-	9	-	-	-	-	9	9	0
05:00	-	-	31	-	-	-	-	31	31	0
06:00	-	-	78	-	-	-	-	78	78	0
07:00	-	-	278	-	-	-	-	278	278	0
08:00	-	-	670	-	-	-	-	670	670	0
09:00	-	-	596	-	-	-	-	596	596	0
10:00	-	-	521	-	-	-	-	521	521	0
11:00	-	476	-	-	-	-	-	476	476	0
12:00	-	578	-	-	-	-	-	578	578	0
13:00	-	605	-	-	-	-	-	605	605	0
14:00	-	658	-	-	-	-	-	658	658	0
15:00	-	746	-	-	-	-	-	746	746	0
16:00	-	1001	-	-	-	-	-	1001	1001	0
17:00	-	1081	-	-	-	-	-	1081	1081	0
18:00	-	1146	-	-	-	-	-	1146	1146	0
19:00	-	728	-	-	-	-	-	728	728	0
20:00	-	447	-	-	-	-	-	447	447	0
21:00	-	363	-	-	-	-	-	363	363	0
22:00	-	287	-	-	-	-	-	287	287	0
23:00	-	131	-	-	-	-	-	131	131	0
24:00	-	59	-	-	-	-	-	59	59	0
Totals	-	8306	2268	-	-	-	-	10574	10574	0
% Avg Wkday	-	78.6	21.4	-	-	-	-			
% Avg Day	-	78.6	21.4	-	-	-	-			
AM Peak Hr	None	12:00	08:00	None	None	None	None			
AM Count	-	578	670	-	-	-	-			
PM Peak Hr	None	18:00	None	None	None	None	None			
PM Count	-	1146	-	-	-	-	-			

File: M1206001.PRN Sta: 121857000000 Id: 121857000000 CommId: 01
City/Town: LOUISVILLE County: BOULDER
Location: N COURTEST RD N/O HECLA DR Format: Dir
Lane/s: 2-1
Direction: South

Time	17 Sun	18 Mon	19 Tue	20 Wed	21 Thu	22 Fri	23 Sat	Daily Avg.	Wkday Avg.	Wkend Avg.
01:00	-	-	27	-	-	-	-	27	27	0
02:00	-	-	15	-	-	-	-	15	15	0
03:00	-	-	14	-	-	-	-	14	14	0
04:00	-	-	22	-	-	-	-	22	22	0
05:00	-	-	48	-	-	-	-	48	48	0
06:00	-	-	147	-	-	-	-	147	147	0
07:00	-	-	538	-	-	-	-	538	538	0
08:00	-	-	1140	-	-	-	-	1140	1140	0
09:00	-	-	799	-	-	-	-	799	799	0
10:00	-	-	659	-	-	-	-	659	659	0
11:00	-	625	-	-	-	-	-	625	625	0
12:00	-	678	-	-	-	-	-	678	678	0
13:00	-	657	-	-	-	-	-	657	657	0
14:00	-	656	-	-	-	-	-	656	656	0
15:00	-	673	-	-	-	-	-	673	673	0
16:00	-	831	-	-	-	-	-	831	831	0
17:00	-	848	-	-	-	-	-	848	848	0
18:00	-	872	-	-	-	-	-	872	872	0
19:00	-	544	-	-	-	-	-	544	544	0
20:00	-	318	-	-	-	-	-	318	318	0
21:00	-	229	-	-	-	-	-	229	229	0
22:00	-	134	-	-	-	-	-	134	134	0
23:00	-	84	-	-	-	-	-	84	84	0
24:00	-	45	-	-	-	-	-	45	45	0
Totals	-	7194	3409	-	-	-	-	10603	10603	0
% Avg Wkday	-	67.8	32.2	-	-	-	-			
% Avg Day	-	67.8	32.2	-	-	-	-			
AM Peak Hr	None	12:00	08:00	None	None	None	None			
AM Count	-	678	1140	-	-	-	-			
PM Peak Hr	None	18:00	None	None	None	None	None			
PM Count	-	872	-	-	-	-	-			

APPENDIX B

Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	4	38	88	6	49	28	776	33	7	1218	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	4	41	96	7	53	30	843	36	8	1324	45
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2300	2279	1324	2287	2288	843	1368			879		
vC1, stage 1 conf vol	1339	1339		904	904							
vC2, stage 2 conf vol	961	940		1383	1384							
vCu, unblocked vol	2300	2279	1324	2287	2288	843	1368			879		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	72	98	78	2	96	85	94			99		
cM capacity (veh/h)	141	177	191	97	156	363	502			768		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	40	46	96	60	30	843	36	8	1324	45
Volume Left	40	0	96	0	30	0	0	8	0	0
Volume Right	0	41	0	53	0	0	36	0	0	45
cSH	141	189	97	317	502	1700	1700	768	1700	1700
Volume to Capacity	0.28	0.24	0.98	0.19	0.06	0.50	0.02	0.01	0.78	0.03
Queue Length 95th (ft)	27	23	147	17	5	0	0	1	0	0
Control Delay (s)	40.3	30.0	166.5	19.0	12.6	0.0	0.0	9.7	0.0	0.0
Lane LOS	E	D	F	C	B			A		
Approach Delay (s)	34.8		109.7		0.4			0.1		
Approach LOS	D		F							

Intersection Summary				
Average Delay	8.1			
Intersection Capacity Utilization	82.3%	ICU Level of Service	E	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3422		3433	3539	1583	3433	3408		3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3422		3433	3539	1583	3433	3408		3433	3539	1583
Volume (vph)	303	403	114	250	769	165	191	372	121	81	686	567
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	329	438	124	272	836	179	208	404	132	88	746	616
RTOR Reduction (vph)	0	27	0	0	0	129	0	30	0	0	0	0
Lane Group Flow (vph)	329	535	0	272	836	50	208	506	0	88	746	616
Turn Type	Prot			Prot		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	13.6	28.7		11.6	26.7	26.7	10.4	33.2		5.4	28.2	94.9
Effective Green, g (s)	13.6	28.7		11.6	26.7	26.7	10.4	33.2		5.4	28.2	94.9
Actuated g/C Ratio	0.14	0.30		0.12	0.28	0.28	0.11	0.35		0.06	0.30	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	492	1035		420	996	445	376	1192		195	1052	1583
v/s Ratio Prot	c0.10	0.16		0.08	c0.24		c0.06	0.15		0.03	c0.21	
v/s Ratio Perm						0.03						0.39
v/c Ratio	0.67	0.52		0.65	0.84	0.11	0.55	0.42		0.45	0.71	0.39
Uniform Delay, d1	38.5	27.4		39.7	32.1	25.3	40.0	23.6		43.3	29.7	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.4	0.4		3.4	6.3	0.1	1.8	1.1		1.7	4.0	0.7
Delay (s)	42.0	27.8		43.1	38.4	25.4	41.8	24.7		45.0	33.7	0.7
Level of Service	D	C		D	D	C	D	C		D	C	A
Approach Delay (s)		33.0			37.6			29.5			20.4	
Approach LOS		C			D			C			C	

Intersection Summary				
HCM Average Control Delay	29.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	67.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	24	26	812	27	34	1308
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	28	883	29	37	1422
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			936			
pX, platoon unblocked	0.85	0.85			0.85	
vC, conflicting volume	2378	883			912	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2627	861			896	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	91			94	
cM capacity (veh/h)	21	301			642	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	26	28	883	29	37	1422
Volume Left	26	0	0	0	37	0
Volume Right	0	28	0	29	0	0
cSH	21	301	1700	1700	642	1700
Volume to Capacity	1.24	0.09	0.52	0.02	0.06	0.84
Queue Length 95th (ft)	87	8	0	0	5	0
Control Delay (s)	545.9	18.2	0.0	0.0	11.0	0.0
Lane LOS	F	C			B	
Approach Delay (s)	271.5		0.0		0.3	
Approach LOS	F					

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	2	6	838	1343	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	7	911	1460	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2386	1462	1464			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2386	1462	1464			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	37	158	461			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	0	2	7	911	1464
Volume Left	0	0	7	0	0
Volume Right	0	2	0	0	4
cSH	1700	158	461	1700	1700
Volume to Capacity	0.00	0.01	0.01	0.54	0.86
Queue Length 95th (ft)	0	1	1	0	0
Control Delay (s)	0.0	28.1	12.9	0.0	0.0
Lane LOS	A	D	B		
Approach Delay (s)	28.1		0.1		0.0
Approach LOS	D				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	63	8	48	32	7	13	53	1267	107	36	1075	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	9	52	35	8	14	58	1377	116	39	1168	57
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2757	2855	1168	2796	2796	1377	1225			1493		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2757	2855	1168	2796	2796	1377	1225			1493		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	37	78	0	50	92	90			91		
cM capacity (veh/h)	6	14	235	4	15	177	569			449		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	68	61	35	22	58	1377	116	39	1168	57
Volume Left	68	0	35	0	58	0	0	39	0	0
Volume Right	0	52	0	14	0	0	116	0	0	57
cSH	6	72	4	37	569	1700	1700	449	1700	1700
Volume to Capacity	11.09	0.85	8.59	0.58	0.10	0.81	0.07	0.09	0.69	0.03
Queue Length 95th (ft)	Err	104	Err	51	8	0	0	7	0	0
Control Delay (s)	Err	163.7	Err	191.4	12.0	0.0	0.0	13.8	0.0	0.0
Lane LOS	F	F	F	F	B			B		
Approach Delay (s)	5370.6		6226.9		0.4			0.4		
Approach LOS	F		F							

Intersection Summary				
Average Delay	349.2			
Intersection Capacity Utilization	83.5%	ICU Level of Service		E
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3443		3433	3539	1583	3433	3397		3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3443		3433	3539	1583	3433	3397		3433	3539	1583
Volume (vph)	532	850	188	263	627	130	116	740	270	188	597	364
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	578	924	204	286	682	141	126	804	293	204	649	396
RTOR Reduction (vph)	0	19	0	0	0	107	0	37	0	0	0	0
Lane Group Flow (vph)	578	1109	0	286	682	34	126	1060	0	204	649	396
Turn Type	Prot			Prot		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	20.3	34.3		10.0	24.0	24.0	8.0	33.0		6.0	31.0	99.3
Effective Green, g (s)	20.3	34.3		10.0	24.0	24.0	8.0	33.0		6.0	31.0	99.3
Actuated g/C Ratio	0.20	0.35		0.10	0.24	0.24	0.08	0.33		0.06	0.31	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	702	1189		346	855	383	277	1129		207	1105	1583
v/s Ratio Prot	0.17	c0.32		0.08	c0.19		0.04	c0.31		c0.06	0.18	
v/s Ratio Perm						0.02						0.25
v/c Ratio	0.82	0.93		0.83	0.80	0.09	0.45	0.94		0.99	0.59	0.25
Uniform Delay, d1	37.8	31.4		43.8	35.4	29.2	43.6	32.2		46.6	28.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.8	13.0		14.8	5.2	0.1	1.2	15.7		57.9	2.3	0.4
Delay (s)	45.5	44.4		58.6	40.6	29.3	44.8	47.8		104.5	31.1	0.4
Level of Service	D	D		E	D	C	D	D		F	C	A
Approach Delay (s)		44.8			43.8			47.5			33.3	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	42.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	99.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	22	64	1368	36	34	1127
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	70	1487	39	37	1225
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			936			
pX, platoon unblocked	0.66	0.66			0.66	
vC, conflicting volume	2786	1487			1526	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3711	1739			1799	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	2			84	
cM capacity (veh/h)	3	71			226	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	24	70	1487	39	37	1225
Volume Left	24	0	0	0	37	0
Volume Right	0	70	0	39	0	0
cSH	3	71	1700	1700	226	1700
Volume to Capacity	8.51	0.98	0.87	0.02	0.16	0.72
Queue Length 95th (ft)	Err	125	0	0	14	0
Control Delay (s)	Err	200.3	0.0	0.0	24.0	0.0
Lane LOS	F	F			C	
Approach Delay (s)	2706.9		0.0		0.7	
Approach LOS	F					

Intersection Summary			
Average Delay	88.1		
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	8	3	1431	1154	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	3	1555	1254	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2817	1255	1257			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2817	1255	1257			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	99			
cM capacity (veh/h)	20	209	554			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	0	9	3	1555	1257
Volume Left	0	0	3	0	0
Volume Right	0	9	0	0	2
cSH	1700	209	554	1700	1700
Volume to Capacity	0.00	0.04	0.01	0.91	0.74
Queue Length 95th (ft)	0	3	0	0	0
Control Delay (s)	0.0	22.9	11.5	0.0	0.0
Lane LOS	A	C	B		
Approach Delay (s)	22.9		0.0		0.0
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	87	12	78	88	14	49	83	776	33	7	1227	66
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	95	13	85	96	15	53	90	843	36	8	1334	72
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2434	2409	1334	2464	2445	843	1405			879		
vC1, stage 1 conf vol	1349	1349		1024	1024							
vC2, stage 2 conf vol	1085	1060		1440	1421							
vCu, unblocked vol	2434	2409	1334	2464	2445	843	1405			879		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	19	92	55	0	85	85	81			99		
cM capacity (veh/h)	117	156	188	9	100	363	486			768		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	95	98	96	68	90	843	36	8	1334	72
Volume Left	95	0	96	0	90	0	0	8	0	0
Volume Right	0	85	0	53	0	0	36	0	0	72
cSH	117	183	9	229	486	1700	1700	768	1700	1700
Volume to Capacity	0.81	0.53	10.53	0.30	0.19	0.50	0.02	0.01	0.78	0.04
Queue Length 95th (ft)	118	68	Err	30	17	0	0	1	0	0
Control Delay (s)	106.3	45.2	Err	27.3	14.1	0.0	0.0	9.7	0.0	0.0
Lane LOS	F	E	F	D	B			A		
Approach Delay (s)	75.2		5838.6		1.3			0.1		
Approach LOS	F		F							

Intersection Summary				
Average Delay	355.6			
Intersection Capacity Utilization	87.2%	ICU Level of Service	E	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3422		3433	3539	1583	3433	3415		3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3422		3433	3539	1583	3433	3415		3433	3539	1583
Volume (vph)	332	403	114	250	772	176	196	396	121	100	729	609
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	361	438	124	272	839	191	213	430	132	109	792	662
RTOR Reduction (vph)	0	27	0	0	0	137	0	27	0	0	0	0
Lane Group Flow (vph)	361	535	0	272	839	54	213	535	0	109	792	662
Turn Type	Prot			Prot		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	14.1	29.4		11.6	26.9	26.9	10.4	33.2		5.4	28.2	95.6
Effective Green, g (s)	14.1	29.4		11.6	26.9	26.9	10.4	33.2		5.4	28.2	95.6
Actuated g/C Ratio	0.15	0.31		0.12	0.28	0.28	0.11	0.35		0.06	0.29	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	506	1052		417	996	445	373	1186		194	1044	1583
v/s Ratio Prot	c0.11	0.16		0.08	c0.24		0.06	0.16		0.03	c0.22	
v/s Ratio Perm						0.03						c0.42
v/c Ratio	0.71	0.51		0.65	0.84	0.12	0.57	0.45		0.56	0.76	0.42
Uniform Delay, d1	38.8	27.2		40.1	32.4	25.6	40.5	24.1		43.9	30.6	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.7	0.4		3.6	6.6	0.1	2.1	1.2		3.7	5.2	0.8
Delay (s)	43.6	27.6		43.7	38.9	25.7	42.6	25.4		47.6	35.8	0.8
Level of Service	D	C		D	D	C	D	C		D	D	A
Approach Delay (s)		33.8			38.0			30.1			21.8	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	24	26	876	27	37	1413
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	28	952	29	40	1536
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			948			
pX, platoon unblocked	0.84	0.84			0.84	
vC, conflicting volume	2568	952			982	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2877	943			978	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	89			93	
cM capacity (veh/h)	14	266			590	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	26	28	952	29	40	1536
Volume Left	26	0	0	0	40	0
Volume Right	0	28	0	29	0	0
cSH	14	266	1700	1700	590	1700
Volume to Capacity	1.85	0.11	0.56	0.02	0.07	0.90
Queue Length 95th (ft)	99	9	0	0	5	0
Control Delay (s)	951.2	20.1	0.0	0.0	11.6	0.0
Lane LOS	F	C			B	
Approach Delay (s)	467.0		0.0		0.3	
Approach LOS	F					

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	65	15	893	1388	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	71	16	971	1509	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2515	1512	1515			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2515	1512	1515			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	52	96			
cM capacity (veh/h)	30	148	441			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	0	71	16	971	1515
Volume Left	0	0	16	0	0
Volume Right	0	71	0	0	7
cSH	1700	148	441	1700	1700
Volume to Capacity	0.00	0.48	0.04	0.57	0.89
Queue Length 95th (ft)	0	56	3	0	0
Control Delay (s)	0.0	50.0	13.5	0.0	0.0
Lane LOS	A	F	B		
Approach Delay (s)	50.0		0.2		0.0
Approach LOS	F				

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	0	893	1389	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	5	0	971	1510	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2480	1510	1517			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2480	1510	1517			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	100			
cM capacity (veh/h)	33	148	440			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	5	971	1510	8
Volume Left	0	0	0	0
Volume Right	5	0	0	8
cSH	148	1700	1700	1700
Volume to Capacity	0.04	0.57	0.89	0.00
Queue Length 95th (ft)	3	0	0	0
Control Delay (s)	30.3	0.0	0.0	0.0
Lane LOS	D			
Approach Delay (s)	30.3	0.0	0.0	
Approach LOS	D			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	849	1570	8	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	923	1707	9	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			1050			
pX, platoon unblocked	0.78				0.78	0.78
vC, conflicting volume	1715				2172	858
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1636				2220	539
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	307				29	381

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	461	461	1138	578	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	9	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.27	0.27	0.67	0.34	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	118	19	108	32	18	13	119	1267	107	36	1087	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	128	21	117	35	20	14	129	1377	116	39	1182	109
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2920	3012	1182	3023	3004	1377	1290			1493		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2920	3012	1182	3023	3004	1377	1290			1493		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	49	0	0	92	76			91		
cM capacity (veh/h)	0	9	231	0	9	177	537			449		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	128	138	35	34	129	1377	116	39	1182	109
Volume Left	128	0	35	0	129	0	0	39	0	0
Volume Right	0	117	0	14	0	0	116	0	0	109
cSH	0	50	0	16	537	1700	1700	449	1700	1700
Volume to Capacity	Err	2.74	Err	2.17	0.24	0.81	0.07	0.09	0.70	0.06
Queue Length 95th (ft)	Err	363	Err	122	23	0	0	7	0	0
Control Delay (s)	Err	959.9	Err	1044.7	13.8	0.0	0.0	13.8	0.0	0.0
Lane LOS	F	F	F	F	B			B		
Approach Delay (s)	Err		Err		1.1			0.4		
Approach LOS	F		F							

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3443		3433	3539	1583	3433	3402		3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3443		3433	3539	1583	3433	3402		3433	3539	1583
Volume (vph)	584	850	188	263	638	144	137	771	270	209	644	411
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	635	924	204	286	693	157	149	838	293	227	700	447
RTOR Reduction (vph)	0	19	0	0	0	112	0	35	0	0	0	0
Lane Group Flow (vph)	635	1109	0	286	693	45	149	1096	0	227	700	447
Turn Type	Prot			Prot		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	20.1	34.3		10.0	24.2	24.2	8.0	33.0		6.0	31.0	99.3
Effective Green, g (s)	20.1	34.3		10.0	24.2	24.2	8.0	33.0		6.0	31.0	99.3
Actuated g/C Ratio	0.20	0.35		0.10	0.24	0.24	0.08	0.33		0.06	0.31	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	695	1189		346	862	386	277	1131		207	1105	1583
v/s Ratio Prot	0.18	c0.32		0.08	c0.20		0.04	c0.32		c0.07	0.20	
v/s Ratio Perm						0.03						0.28
v/c Ratio	0.91	0.93		0.83	0.80	0.12	0.54	0.97		1.10	0.63	0.28
Uniform Delay, d1	38.8	31.4		43.8	35.3	29.2	43.9	32.7		46.6	29.3	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.5	13.0		14.8	5.5	0.1	2.0	20.3		90.8	2.8	0.4
Delay (s)	55.2	44.4		58.6	40.8	29.4	45.9	53.0		137.4	32.0	0.4
Level of Service	E	D		E	D	C	D	D		F	C	A
Approach Delay (s)		48.3			43.7			52.2			39.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	46.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	99.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	22	66	1465	36	36	1242
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	72	1592	39	39	1350
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			936			
pX, platoon unblocked	0.65	0.65			0.65	
vC, conflicting volume	3021	1592			1632	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	4116	1913			1974	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			79	
cM capacity (veh/h)	1	55			190	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	24	72	1592	39	39	1350
Volume Left	24	0	0	0	39	0
Volume Right	0	72	0	39	0	0
cSH	1	55	1700	1700	190	1700
Volume to Capacity	17.06	1.31	0.94	0.02	0.21	0.79
Queue Length 95th (ft)	Err	159	0	0	19	0
Control Delay (s)	Err	347.6	0.0	0.0	28.8	0.0
Lane LOS	F	F			D	
Approach Delay (s)	2760.4		0.0		0.8	
Approach LOS	F					

Intersection Summary			
Average Delay	85.1		
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	43	35	1497	1237	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	47	38	1627	1345	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3053	1349	1354			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3053	1349	1354			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	75	93			
cM capacity (veh/h)	13	184	508			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	0	47	38	1627	1354
Volume Left	0	0	38	0	0
Volume Right	0	47	0	0	10
cSH	1700	184	508	1700	1700
Volume to Capacity	0.00	0.25	0.07	0.96	0.80
Queue Length 95th (ft)	0	24	6	0	0
Control Delay (s)	0.0	31.1	12.7	0.0	0.0
Lane LOS	A	D	B		
Approach Delay (s)	31.1		0.3		0.0
Approach LOS	D				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	24	0	1497	1223	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	26	0	1627	1329	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2957	1329	1335			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2957	1329	1335			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	86	100			
cM capacity (veh/h)	16	189	517			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	26	1627	1329	5
Volume Left	0	0	0	0
Volume Right	26	0	0	5
cSH	189	1700	1700	1700
Volume to Capacity	0.14	0.96	0.78	0.00
Queue Length 95th (ft)	12	0	0	0
Control Delay (s)	27.0	0.0	0.0	0.0
Lane LOS	D			
Approach Delay (s)	27.0	0.0	0.0	
Approach LOS	D			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	1539	1125	32	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1673	1223	35	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			1021			
pX, platoon unblocked	0.83				0.83	0.83
vC, conflicting volume	1258				2077	629
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1108				2092	352
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	521				38	536

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	836	836	815	442	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	35	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.49	0.49	0.48	0.26	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	4	38	95	7	52	28	903	35	8	1473	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	4	41	103	8	57	30	982	38	9	1601	45
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2230	2699	801	1904	2705	491	1646			1020		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2230	2699	801	1904	2705	491	1646			1020		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	77	87	0	60	89	92			99		
cM capacity (veh/h)	14	19	328	28	19	523	389			676		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	40	46	103	64	30	491	491	38	9	801	801	45
Volume Left	40	0	103	0	30	0	0	0	9	0	0	0
Volume Right	0	41	0	57	0	0	0	38	0	0	0	45
cSH	14	129	28	126	389	1700	1700	1700	676	1700	1700	1700
Volume to Capacity	2.98	0.35	3.67	0.51	0.08	0.29	0.29	0.02	0.01	0.47	0.47	0.03
Queue Length 95th (ft)	147	36	Err	59	6	0	0	0	1	0	0	0
Control Delay (s)	1461.1	47.3	Err	60.0	15.0	0.0	0.0	0.0	10.4	0.0	0.0	0.0
Lane LOS	F	E	F	F	C				B			
Approach Delay (s)	709.4		6191.2		0.4				0.1			
Approach LOS	F		F									

Intersection Summary				
Average Delay	371.2			
Intersection Capacity Utilization	59.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3421		3433	3539	1583	3433	3429		3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3421		3433	3539	1583	3433	3429		3433	3539	1583
Volume (vph)	360	432	123	268	826	194	206	491	129	103	807	626
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	470	134	291	898	211	224	534	140	112	877	680
RTOR Reduction (vph)	0	26	0	0	0	150	0	22	0	0	0	0
Lane Group Flow (vph)	391	578	0	291	898	61	224	652	0	112	877	680
Turn Type	Prot			Prot		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	13.5	29.4		12.5	28.4	28.4	9.7	35.3		5.5	31.1	98.7
Effective Green, g (s)	13.5	29.4		12.5	28.4	28.4	9.7	35.3		5.5	31.1	98.7
Actuated g/C Ratio	0.14	0.30		0.13	0.29	0.29	0.10	0.36		0.06	0.32	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	470	1019		435	1018	455	337	1226		191	1115	1583
v/s Ratio Prot	c0.11	0.17		0.08	c0.25		0.07	c0.19		0.03	c0.25	
v/s Ratio Perm						0.04						0.43
v/c Ratio	0.83	0.57		0.67	0.88	0.13	0.66	0.53		0.59	0.79	0.43
Uniform Delay, d1	41.5	29.3		41.1	33.6	26.0	42.9	25.1		45.5	30.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.9	0.7		3.9	9.1	0.1	4.9	1.7		4.5	5.6	0.9
Delay (s)	53.4	30.0		45.0	42.7	26.2	47.8	26.8		50.0	36.4	0.9
Level of Service	D	C		D	D	C	D	C		D	D	A
Approach Delay (s)		39.2			40.7			32.0			22.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	98.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	1	8	25	5	27	57	958	29	36	1502	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1	9	27	5	29	62	1041	32	39	1633	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								936				
pX, platoon unblocked	0.91	0.91		0.91	0.91	0.91				0.91		
vC, conflicting volume	2388	2908	816	2069	2928	521	1685			1073		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2426	2997	816	2076	3020	374	1685			981		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	89	97	0	41	95	84			94		
cM capacity (veh/h)	7	10	320	21	9	567	376			636		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	12	9	33	29	62	521	521	32	39	816	816	52
Volume Left	11	0	27	0	62	0	0	0	39	0	0	0
Volume Right	0	9	0	29	0	0	0	32	0	0	0	52
cSH	7	320	17	567	376	1700	1700	1700	636	1700	1700	1700
Volume to Capacity	1.78	0.03	1.89	0.05	0.16	0.31	0.31	0.02	0.06	0.48	0.48	0.03
Queue Length 95th (ft)	62	2	115	4	15	0	0	0	5	0	0	0
Control Delay (s)	1399.1	16.6	879.6	11.7	16.5	0.0	0.0	0.0	11.0	0.0	0.0	0.0
Lane LOS	F	C	F	B	C				B			
Approach Delay (s)	817.0		468.5		0.9				0.3			
Approach LOS	F		F									

Intersection Summary				
Average Delay	16.1			
Intersection Capacity Utilization	62.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	29	966	1581	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	5	32	1050	1718	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2319	872	1743			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2319	872	1743			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	91			
cM capacity (veh/h)	29	294	356			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	5	32	525	525	1146	598
Volume Left	0	0	32	0	0	0	0
Volume Right	0	5	0	0	0	0	25
cSH	1700	294	356	1700	1700	1700	1700
Volume to Capacity	0.00	0.02	0.09	0.31	0.31	0.67	0.35
Queue Length 95th (ft)	0	1	7	0	0	0	0
Control Delay (s)	0.0	17.5	16.1	0.0	0.0	0.0	0.0
Lane LOS	A	C	C				
Approach Delay (s)	17.5		0.5			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	62	9	48	35	7	14	53	1519	116	38	1246	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	67	10	52	38	8	15	58	1651	126	41	1354	57
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2397	3329	677	2583	3260	826	1411			1777		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2397	3329	677	2583	3260	826	1411			1777		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	87	0	0	95	88			88		
cM capacity (veh/h)	0	6	395	0	7	315	479			346		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	67	62	38	23	58	826	826	126	41	677	677	57
Volume Left	67	0	38	0	58	0	0	0	41	0	0	0
Volume Right	0	52	0	15	0	0	0	126	0	0	0	57
cSH	0	36	0	20	479	1700	1700	1700	346	1700	1700	1700
Volume to Capacity	Err	1.70	Err	1.14	0.12	0.49	0.49	0.07	0.12	0.40	0.40	0.03
Queue Length 95th (ft)	Err	167	Err	78	10	0	0	0	10	0	0	0
Control Delay (s)	Err	577.5	Err	523.6	13.5	0.0	0.0	0.0	16.8	0.0	0.0	0.0
Lane LOS	F	F	F	F	B				C			
Approach Delay (s)	Err		Err		0.4				0.5			
Approach LOS	F		F									

Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	60.8%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3442		3433	3539	1583	3433	3391		3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3442		3433	3539	1583	3433	3391		3433	3539	1583
Volume (vph)	496	912	203	281	672	125	125	742	289	197	645	381
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	539	991	221	305	730	136	136	807	314	214	701	414
RTOR Reduction (vph)	0	19	0	0	0	104	0	41	0	0	0	0
Lane Group Flow (vph)	539	1193	0	305	730	32	136	1080	0	214	701	414
Turn Type	Prot			Prot		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	20.3	35.0		9.0	23.7	23.7	8.0	33.0		7.0	32.0	100.0
Effective Green, g (s)	20.3	35.0		9.0	23.7	23.7	8.0	33.0		7.0	32.0	100.0
Actuated g/C Ratio	0.20	0.35		0.09	0.24	0.24	0.08	0.33		0.07	0.32	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	697	1205		309	839	375	275	1119		240	1132	1583
v/s Ratio Prot	0.16	c0.35		0.09	c0.21		0.04	c0.32		c0.06	0.20	
v/s Ratio Perm						0.02						0.26
v/c Ratio	0.77	0.99		0.99	0.87	0.09	0.49	0.97		0.89	0.62	0.26
Uniform Delay, d1	37.7	32.3		45.4	36.7	29.7	44.1	32.9		46.1	28.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.3	23.5		47.2	9.8	0.1	1.4	19.7		31.1	2.5	0.4
Delay (s)	43.0	55.8		92.7	46.4	29.8	45.5	52.7		77.2	31.4	0.4
Level of Service	D	E		F	D	C	D	D		E	C	A
Approach Delay (s)		51.9			56.5			51.9			29.1	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM Average Control Delay	47.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	63	5	52	22	1	68	11	1575	37	35	1341	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	5	57	24	1	74	12	1712	40	38	1458	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								936				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	2488	3310	729	2600	3279	856	1467			1752		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2651	3747	729	2800	3706	474	1467			1669		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	85	0	62	82	97			87		
cM capacity (veh/h)	4	3	365	0	3	402	456			286		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	74	57	25	74	12	856	856	40	38	729	729	10
Volume Left	68	0	24	0	12	0	0	0	38	0	0	0
Volume Right	0	57	0	74	0	0	0	40	0	0	0	10
cSH	4	365	0	402	456	1700	1700	1700	286	1700	1700	1700
Volume to Capacity	18.19	0.15	Err	0.18	0.03	0.50	0.50	0.02	0.13	0.43	0.43	0.01
Queue Length 95th (ft)	Err	14	Err	17	2	0	0	0	11	0	0	0
Control Delay (s)	Err	16.6	Err	15.9	13.1	0.0	0.0	0.0	19.5	0.0	0.0	0.0
Lane LOS	F	C	F	C	B				C			
Approach Delay (s)	5673.3		Err		0.1				0.5			
Approach LOS	F		F									

Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	61.5%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	29	7	1700	1325	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	32	8	1848	1440	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2383	723	1447			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2383	723	1447			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	98			
cM capacity (veh/h)	28	368	464			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	32	8	924	924	960	487
Volume Left	0	0	8	0	0	0	0
Volume Right	0	32	0	0	0	0	7
cSH	1700	368	464	1700	1700	1700	1700
Volume to Capacity	0.00	0.09	0.02	0.54	0.54	0.56	0.29
Queue Length 95th (ft)	0	7	1	0	0	0	0
Control Delay (s)	0.0	15.7	12.9	0.0	0.0	0.0	0.0
Lane LOS	A	C	B				
Approach Delay (s)	15.7		0.1			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	66	9	46	95	10	52	53	925	35	8	1485	63
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	10	50	103	11	57	58	1005	38	9	1614	68
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2311	2790	807	2000	2821	503	1683			1043		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2311	2790	807	2000	2821	503	1683			1043		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	36	85	0	26	89	85			99		
cM capacity (veh/h)	6	15	324	13	15	514	376			662		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	72	60	103	67	58	503	503	38	9	807	807	68
Volume Left	72	0	103	0	58	0	0	0	9	0	0	0
Volume Right	0	50	0	57	0	0	0	38	0	0	0	68
cSH	6	76	13	79	376	1700	1700	1700	662	1700	1700	1700
Volume to Capacity	11.23	0.79	7.93	0.85	0.15	0.30	0.30	0.02	0.01	0.47	0.47	0.04
Queue Length 95th (ft)	Err	96	Err	109	13	0	0	0	1	0	0	0
Control Delay (s)	Err	144.2	Err	153.2	16.3	0.0	0.0	0.0	10.5	0.0	0.0	0.0
Lane LOS	F	F	F	F	C				B			
Approach Delay (s)	5519.6		6110.9		0.9				0.1			
Approach LOS	F		F									

Intersection Summary					
Average Delay	571.9				
Intersection Capacity Utilization	62.6%	ICU Level of Service		B	
Analysis Period (min)	15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3421		3433	3539	1583	3433	3433		3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3421		3433	3539	1583	3433	3433		3433	3539	1583
Volume (vph)	389	432	123	268	830	204	214	512	129	122	849	669
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	423	470	134	291	902	222	233	557	140	133	923	727
RTOR Reduction (vph)	0	26	0	0	0	159	0	22	0	0	0	0
Lane Group Flow (vph)	423	578	0	291	902	63	233	675	0	133	923	727
Turn Type	Prot			Prot		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	14.5	29.8		12.6	27.9	27.9	9.0	32.3		7.7	31.0	98.4
Effective Green, g (s)	14.5	29.8		12.6	27.9	27.9	9.0	32.3		7.7	31.0	98.4
Actuated g/C Ratio	0.15	0.30		0.13	0.28	0.28	0.09	0.33		0.08	0.32	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	506	1036		440	1003	449	314	1127		269	1115	1583
v/s Ratio Prot	c0.12	0.17		0.08	c0.25		0.07	c0.20		0.04	c0.26	
v/s Ratio Perm						0.04						0.46
v/c Ratio	0.84	0.56		0.66	0.90	0.14	0.74	0.60		0.49	0.83	0.46
Uniform Delay, d1	40.8	28.8		40.9	33.9	26.3	43.6	27.6		43.5	31.2	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.4	0.7		3.7	10.7	0.1	9.1	2.4		1.4	7.1	1.0
Delay (s)	52.2	29.4		44.6	44.6	26.4	52.7	30.0		44.9	38.3	1.0
Level of Service	D	C		D	D	C	D	C		D	D	A
Approach Delay (s)		38.8			41.7			35.7			23.6	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	33.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	32	8	80	25	10	27	80	994	29	36	1534	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	9	87	27	11	29	87	1080	32	39	1667	57
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			8									
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								936				
pX, platoon unblocked	0.90	0.90		0.90	0.90	0.90				0.90		
vC, conflicting volume	2495	3032	834	2171	3057	540	1724			1112		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2551	3149	834	2190	3176	375	1724			1011		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	72	0	0	95	76			94		
cM capacity (veh/h)	0	7	312	0	7	559	363			612		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	130	38	29	87	540	540	32	39	834	834	57
Volume Left	35	27	0	87	0	0	0	39	0	0	0
Volume Right	87	0	29	0	0	0	32	0	0	0	57
cSH	0	0	559	363	1700	1700	1700	612	1700	1700	1700
Volume to Capacity	487.32	Err	0.05	0.24	0.32	0.32	0.02	0.06	0.49	0.49	0.03
Queue Length 95th (ft)	Err	Err	4	23	0	0	0	5	0	0	0
Control Delay (s)	Err	Err	11.8	18.0	0.0	0.0	0.0	11.3	0.0	0.0	0.0
Lane LOS	F	F	B	C				B			
Approach Delay (s)	Err	Err		1.3				0.3			
Approach LOS	F	F									

Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	65.7%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	26	40	1013	1597	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	28	43	1101	1736	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2386	881	1762			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2386	881	1762			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	90	88			
cM capacity (veh/h)	25	290	351			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	28	43	551	551	1157	605
Volume Left	0	0	43	0	0	0	0
Volume Right	0	28	0	0	0	0	26
cSH	1700	290	351	1700	1700	1700	1700
Volume to Capacity	0.00	0.10	0.12	0.32	0.32	0.68	0.36
Queue Length 95th (ft)	0	8	11	0	0	0	0
Control Delay (s)	0.0	18.8	16.7	0.0	0.0	0.0	0.0
Lane LOS	A	C	C				
Approach Delay (s)	18.8		0.6			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	4	0	1017	1628	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	4	0	1105	1770	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2322	885	1777			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2322	885	1777			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	100			
cM capacity (veh/h)	31	288	346			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	4	553	553	885	885	8
Volume Left	0	0	0	0	0	0
Volume Right	4	0	0	0	0	8
cSH	288	1700	1700	1700	1700	1700
Volume to Capacity	0.02	0.33	0.33	0.52	0.52	0.00
Queue Length 95th (ft)	1	0	0	0	0	0
Control Delay (s)	17.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	17.7	0.0		0.0		
Approach LOS	C					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	944	1697	11	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1026	1845	12	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			1021			
pX, platoon unblocked	0.76				0.76	0.76
vC, conflicting volume	1857				2364	928
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1812				2476	598
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	256				19	340

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	513	513	1230	627	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	12	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.30	0.30	0.72	0.37	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	106	14	79	35	13	14	73	1531	116	38	1272	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	115	15	86	38	14	15	79	1664	126	41	1383	95
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2478	3414	691	2690	3383	832	1477			1790		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2478	3414	691	2690	3383	832	1477			1790		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	78	0	0	95	82			88		
cM capacity (veh/h)	0	5	387	0	5	312	452			342		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	115	101	38	29	79	832	832	126	41	691	691	95
Volume Left	115	0	38	0	79	0	0	0	41	0	0	0
Volume Right	0	86	0	15	0	0	0	126	0	0	0	95
cSH	0	32	0	11	452	1700	1700	1700	342	1700	1700	1700
Volume to Capacity	Err	3.19	Err	2.68	0.18	0.49	0.49	0.07	0.12	0.41	0.41	0.06
Queue Length 95th (ft)	Err	Err	Err	116	16	0	0	0	10	0	0	0
Control Delay (s)	Err	Err	Err	1443.1	14.7	0.0	0.0	0.0	17.0	0.0	0.0	0.0
Lane LOS	F	F	F	F	B				C			
Approach Delay (s)	Err		Err		0.6				0.5			
Approach LOS	F		F									

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3442		3433	3539	1583	3433	3394		3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3442		3433	3539	1583	3433	3394		3433	3539	1583
Volume (vph)	548	912	203	281	686	135	154	765	289	218	692	428
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	596	991	221	305	746	147	167	832	314	237	752	465
RTOR Reduction (vph)	0	19	0	0	0	111	0	39	0	0	0	0
Lane Group Flow (vph)	596	1193	0	305	746	36	167	1107	0	237	752	465
Turn Type	Prot			Prot		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						Free
Actuated Green, G (s)	19.7	35.0		9.0	24.3	24.3	9.0	33.0		7.0	31.0	100.0
Effective Green, g (s)	19.7	35.0		9.0	24.3	24.3	9.0	33.0		7.0	31.0	100.0
Actuated g/C Ratio	0.20	0.35		0.09	0.24	0.24	0.09	0.33		0.07	0.31	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	676	1205		309	860	385	309	1120		240	1097	1583
v/s Ratio Prot	0.17	c0.35		0.09	c0.21		0.05	c0.33		c0.07	0.21	
v/s Ratio Perm						0.02						0.29
v/c Ratio	0.88	0.99		0.99	0.87	0.09	0.54	0.99		0.99	0.69	0.29
Uniform Delay, d1	39.0	32.3		45.4	36.3	29.3	43.5	33.3		46.5	30.2	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.9	23.5		47.2	9.2	0.1	1.9	24.3		54.1	3.5	0.5
Delay (s)	51.9	55.8		92.7	45.5	29.4	45.4	57.6		100.5	33.7	0.5
Level of Service	D	E		F	D	C	D	E		F	C	A
Approach Delay (s)		54.5			55.5			56.0			34.0	
Approach LOS		D			E			E			C	

Intersection Summary			
HCM Average Control Delay	49.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	75	13	100	22	10	68	52	1618	37	35	1407	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	14	109	24	11	74	57	1759	40	38	1529	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								936				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	2677	3517	765	2828	3507	879	1559			1799		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2906	4029	765	3108	4015	501	1559			1731		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	69	0	0	81	87			86		
cM capacity (veh/h)	0	1	346	0	2	385	420			269		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	96	109	35	74	57	879	879	40	38	765	765	29
Volume Left	82	0	24	0	57	0	0	0	38	0	0	0
Volume Right	0	109	0	74	0	0	0	40	0	0	0	29
cSH	0	346	0	385	420	1700	1700	1700	269	1700	1700	1700
Volume to Capacity	Err	0.31	Err	0.19	0.13	0.52	0.52	0.02	0.14	0.45	0.45	0.02
Queue Length 95th (ft)	Err	33	Err	17	12	0	0	0	12	0	0	0
Control Delay (s)	Err	20.1	Err	16.5	14.9	0.0	0.0	0.0	20.5	0.0	0.0	0.0
Lane LOS	F	C	F	C	B				C			
Approach Delay (s)	Err		Err		0.5				0.5			
Approach LOS	F		F									

Intersection Summary					
Average Delay		Err			
Intersection Capacity Utilization		63.8%	ICU Level of Service		B
Analysis Period (min)		15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	47	31	1731	1392	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	51	34	1882	1513	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2526	761	1523			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2526	761	1523			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	85	92			
cM capacity (veh/h)	21	348	434			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	51	34	941	941	1009	514
Volume Left	0	0	34	0	0	0	0
Volume Right	0	51	0	0	0	0	10
cSH	1700	348	434	1700	1700	1700	1700
Volume to Capacity	0.00	0.15	0.08	0.55	0.55	0.59	0.30
Queue Length 95th (ft)	0	13	6	0	0	0	0
Control Delay (s)	0.0	17.1	14.0	0.0	0.0	0.0	0.0
Lane LOS	A	C	B				
Approach Delay (s)	17.1		0.2			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	17	0	1731	1383	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	18	0	1882	1503	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2444	752	1509			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2444	752	1509			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	100			
cM capacity (veh/h)	26	353	439			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	18	941	941	752	752	5
Volume Left	0	0	0	0	0	0
Volume Right	18	0	0	0	0	5
cSH	353	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.55	0.55	0.44	0.44	0.00
Queue Length 95th (ft)	4	0	0	0	0	0
Control Delay (s)	15.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	15.8	0.0		0.0		
Approach LOS	C					

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	1663	1225	43	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1808	1332	47	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			1021			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	1378				2259	689
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1232				2320	380
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	454				26	500

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	904	904	888	491	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	47	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.53	0.53	0.52	0.29	0.00
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.87		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1620		1770	1645		1770	1863	1583	1770	1863	1583
Flt Permitted	0.71	1.00		0.60	1.00		0.05	1.00	1.00	0.28	1.00	1.00
Satd. Flow (perm)	1328	1620		1123	1645		86	1863	1583	529	1863	1583
Volume (vph)	87	12	78	88	14	49	83	776	33	7	1227	66
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	13	85	96	15	53	90	843	36	8	1334	72
RTOR Reduction (vph)	0	75	0	0	47	0	0	0	8	0	0	19
Lane Group Flow (vph)	95	23	0	96	21	0	90	843	28	8	1334	53
Turn Type	Perm			Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	13.0	13.0		13.0	13.0		90.2	86.2	86.2	83.8	83.0	83.0
Effective Green, g (s)	13.0	13.0		13.0	13.0		90.2	86.2	86.2	83.8	83.0	83.0
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.81	0.77	0.77	0.75	0.74	0.74
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	154	188		130	191		129	1434	1218	405	1381	1173
v/s Ratio Prot		0.01			0.01		c0.02	0.45		0.00	c0.72	
v/s Ratio Perm	0.07			c0.09			0.53		0.02	0.01		0.03
v/c Ratio	0.62	0.12		0.74	0.11		0.70	0.59	0.02	0.02	0.97	0.05
Uniform Delay, d1	47.1	44.4		47.9	44.3		34.6	5.4	3.0	4.7	13.2	3.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.2	0.3		19.5	0.3		15.2	0.6	0.0	0.0	16.6	0.0
Delay (s)	54.3	44.7		67.4	44.6		49.8	6.0	3.0	4.7	29.8	3.9
Level of Service	D	D		E	D		D	A	A	A	C	A
Approach Delay (s)		49.4			57.9			10.0			28.4	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	112.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.87		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1626		1770	1748		1770	1863	1583	1770	1863	1583
Flt Permitted	0.73	1.00		0.51	1.00		0.07	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1369	1626		945	1748		123	1863	1583	106	1863	1583
Volume (vph)	118	19	108	32	18	13	119	1267	107	36	1087	100
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	21	117	35	20	14	129	1377	116	39	1182	109
RTOR Reduction (vph)	0	102	0	0	12	0	0	0	32	0	0	32
Lane Group Flow (vph)	128	36	0	35	22	0	129	1377	84	39	1182	77
Turn Type	Perm			Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	13.2	13.2		13.2	13.2		76.2	72.2	72.2	73.0	70.6	70.6
Effective Green, g (s)	13.2	13.2		13.2	13.2		76.2	72.2	72.2	73.0	70.6	70.6
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.76	0.72	0.72	0.73	0.71	0.71
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	181	215		125	231		160	1348	1145	118	1318	1120
v/s Ratio Prot		0.02			0.01		c0.03	c0.74		0.01	0.63	
v/s Ratio Perm	c0.09			0.04			0.59		0.05	0.24		0.05
v/c Ratio	0.71	0.17		0.28	0.09		0.81	1.02	0.07	0.33	0.90	0.07
Uniform Delay, d1	41.4	38.4		39.0	38.0		23.6	13.8	4.0	28.7	11.7	4.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.9	0.4		1.2	0.2		24.8	30.1	0.1	1.6	9.8	0.1
Delay (s)	53.3	38.8		40.2	38.2		48.4	43.9	4.2	30.3	21.5	4.6
Level of Service	D	D		D	D		D	D	A	C	C	A
Approach Delay (s)		45.8			39.3			41.4			20.4	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	33.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.88		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1630		1770	1629		1770	3539	1583	1770	3539	1583
Flt Permitted	0.71	1.00		0.72	1.00		0.10	1.00	1.00	0.28	1.00	1.00
Satd. Flow (perm)	1328	1630		1337	1629		183	3539	1583	513	3539	1583
Volume (vph)	66	9	46	95	10	52	53	925	35	8	1485	63
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	10	50	103	11	57	58	1005	38	9	1614	68
RTOR Reduction (vph)	0	44	0	0	50	0	0	0	10	0	0	20
Lane Group Flow (vph)	72	16	0	103	18	0	58	1005	28	9	1614	48
Turn Type	Perm			Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	12.8	12.8		12.8	12.8		80.4	75.2	75.2	72.0	70.8	70.8
Effective Green, g (s)	12.8	12.8		12.8	12.8		80.4	75.2	75.2	72.0	70.8	70.8
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.79	0.74	0.74	0.71	0.70	0.70
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	168	206		169	206		233	2630	1176	380	2476	1107
v/s Ratio Prot		0.01			0.01		c0.01	0.28		0.00	c0.46	
v/s Ratio Perm	0.05			c0.08			0.18		0.02	0.02		0.03
v/c Ratio	0.43	0.08		0.61	0.09		0.25	0.38	0.02	0.02	0.65	0.04
Uniform Delay, d1	40.8	39.0		41.8	39.0		6.8	4.7	3.4	4.3	8.4	4.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.2		6.1	0.2		0.6	0.4	0.0	0.0	1.3	0.1
Delay (s)	42.6	39.2		47.9	39.2		7.3	5.1	3.4	4.3	9.7	4.8
Level of Service	D	D		D	D		A	A	A	A	A	A
Approach Delay (s)		41.0			44.5			5.1			9.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	101.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1791	1583		1799	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.74	1.00		0.77	1.00	0.14	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)		1386	1583		1426	1583	254	3539	1583	429	3539	1583
Volume (vph)	32	8	80	25	10	27	80	994	29	36	1534	52
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	9	87	27	11	29	87	1080	32	39	1667	57
RTOR Reduction (vph)	0	0	53	0	0	27	0	0	7	0	0	9
Lane Group Flow (vph)	0	44	34	0	38	2	87	1080	25	39	1667	48
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	pm+pt		Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		8.6	8.6		8.6	8.6	78.6	78.6	78.6	85.2	85.2	85.2
Effective Green, g (s)		8.6	8.6		8.6	8.6	78.6	78.6	78.6	85.2	85.2	85.2
Actuated g/C Ratio		0.08	0.08		0.08	0.08	0.77	0.77	0.77	0.84	0.84	0.84
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		117	134		120	134	196	2732	1222	393	2962	1325
v/s Ratio Prot								0.31		0.00	c0.47	
v/s Ratio Perm		c0.03	0.02		0.03	0.00	0.34		0.02	0.08		0.03
v/c Ratio		0.38	0.25		0.32	0.02	0.44	0.40	0.02	0.10	0.56	0.04
Uniform Delay, d1		44.1	43.6		43.8	42.7	4.0	3.8	2.7	2.0	2.6	1.4
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.0	1.0		1.5	0.1	1.6	0.1	0.0	0.1	0.8	0.1
Delay (s)		46.1	44.6		45.4	42.8	5.6	3.9	2.7	2.1	3.3	1.4
Level of Service		D	D		D	D	A	A	A	A	A	A
Approach Delay (s)		45.1			44.2			4.0			3.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	101.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.87		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1625		1770	1718		1770	3539	1583	1770	3539	1583
Flt Permitted	0.74	1.00		0.69	1.00		0.14	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1375	1625		1288	1718		255	3539	1583	157	3539	1583
Volume (vph)	106	14	79	35	13	14	73	1531	116	38	1272	87
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	15	86	38	14	15	79	1664	126	41	1383	95
RTOR Reduction (vph)	0	73	0	0	13	0	0	0	44	0	0	34
Lane Group Flow (vph)	115	28	0	38	16	0	79	1664	82	41	1383	61
Turn Type	Perm			Perm			pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	11.8	11.8		11.8	11.8		55.3	51.3	51.3	54.5	50.9	50.9
Effective Green, g (s)	11.8	11.8		11.8	11.8		55.3	51.3	51.3	54.5	50.9	50.9
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.70	0.65	0.65	0.69	0.65	0.65
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	206	244		193	258		256	2307	1032	183	2289	1024
v/s Ratio Prot		0.02			0.01		c0.02	c0.47		0.01	0.39	
v/s Ratio Perm	c0.08			0.03			0.20		0.05	0.14		0.04
v/c Ratio	0.56	0.11		0.20	0.06		0.31	0.72	0.08	0.22	0.60	0.06
Uniform Delay, d1	31.0	28.9		29.3	28.7		5.5	9.0	5.0	7.3	8.1	5.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.2		0.5	0.1		0.7	1.1	0.0	0.6	0.5	0.0
Delay (s)	34.3	29.1		29.8	28.8		6.2	10.1	5.1	7.9	8.5	5.1
Level of Service	C	C		C	C		A	B	A	A	A	A
Approach Delay (s)		31.9			29.4			9.6			8.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1786	1583		1801	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.73	1.00		0.79	1.00	0.11	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)		1364	1583		1468	1583	209	3539	1583	141	3539	1583
Volume (vph)	75	13	100	22	10	68	52	1618	37	35	1407	27
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	14	109	24	11	74	57	1759	40	38	1529	29
RTOR Reduction (vph)	0	0	94	0	0	64	0	0	13	0	0	10
Lane Group Flow (vph)	0	96	15	0	35	10	57	1759	27	38	1529	19
Turn Type	Perm		Perm	Perm		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		11.0	11.0		11.0	11.0	56.6	53.0	53.0	56.4	52.9	52.9
Effective Green, g (s)		11.0	11.0		11.0	11.0	56.6	53.0	53.0	56.4	52.9	52.9
Actuated g/C Ratio		0.14	0.14		0.14	0.14	0.71	0.67	0.67	0.71	0.67	0.67
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		189	219		203	219	219	2359	1055	172	2355	1053
v/s Ratio Prot							c0.01	c0.50		0.01	0.43	
v/s Ratio Perm		c0.07	0.01		0.02	0.01	0.17		0.02	0.15		0.01
v/c Ratio		0.51	0.07		0.17	0.05	0.26	0.75	0.03	0.22	0.65	0.02
Uniform Delay, d1		31.7	29.8		30.2	29.7	5.8	8.8	4.5	7.7	7.8	4.5
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.1	0.1		0.4	0.1	0.6	1.3	0.0	0.7	0.6	0.0
Delay (s)		33.9	29.9		30.6	29.8	6.4	10.1	4.5	8.3	8.5	4.5
Level of Service		C	C		C	C	A	B	A	A	A	A
Approach Delay (s)		31.8			30.1			9.9			8.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

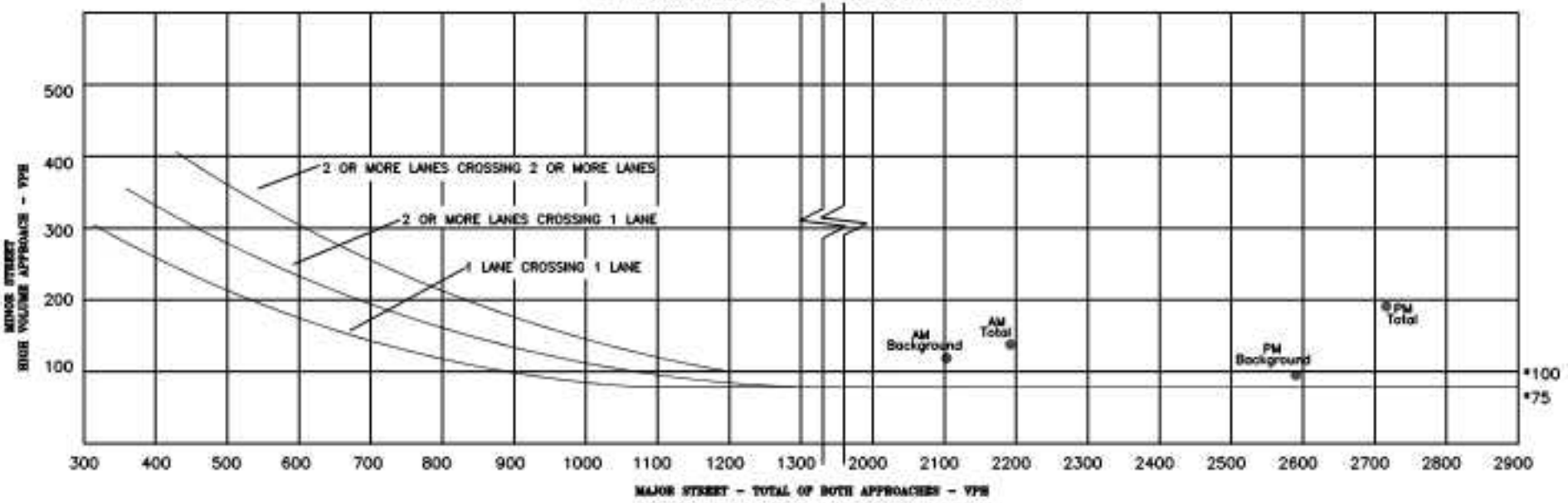
APPENDIX C

Traffic Signal Warrants

C-1

Year 2015 Peak-Hour Traffic
State Highway 42/ Paschal Drive
MUTCD Traffic Signal Warrant 3, Peak-Hour (70% Factor)

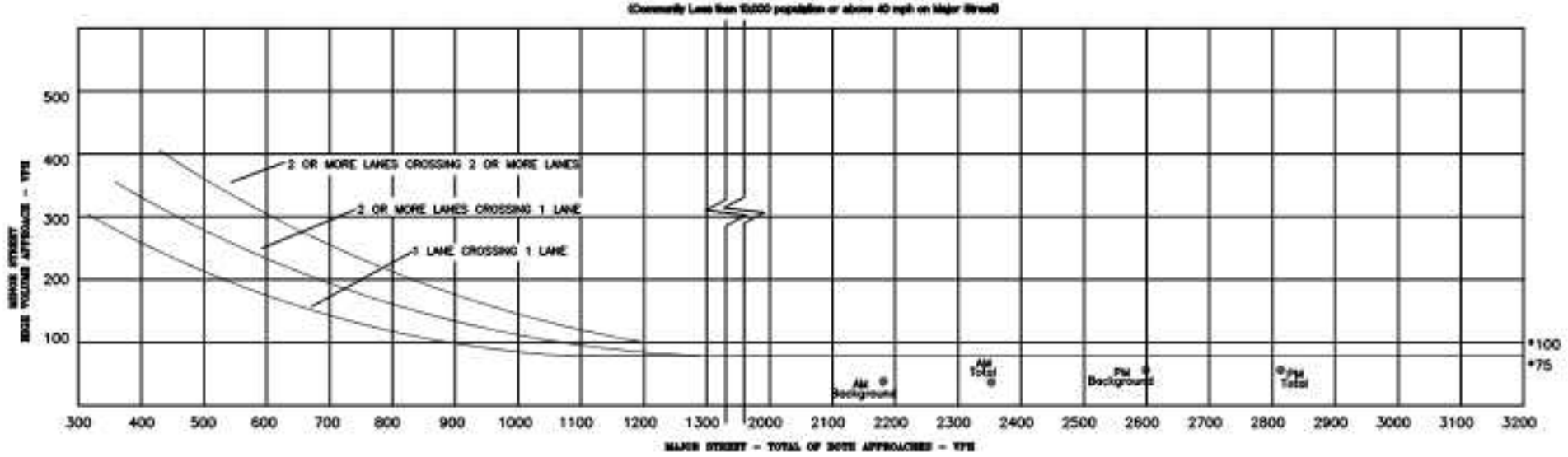
(Community Less than 10,000 population or above 40 mph on Major Street)



*Note: 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.

C-2

Year 2015 Peak-Hour Traffic
State Highway 42/ Hecla Drive
MUTCD Traffic Signal Warrant 3, Peak-Hour (70% Factor)

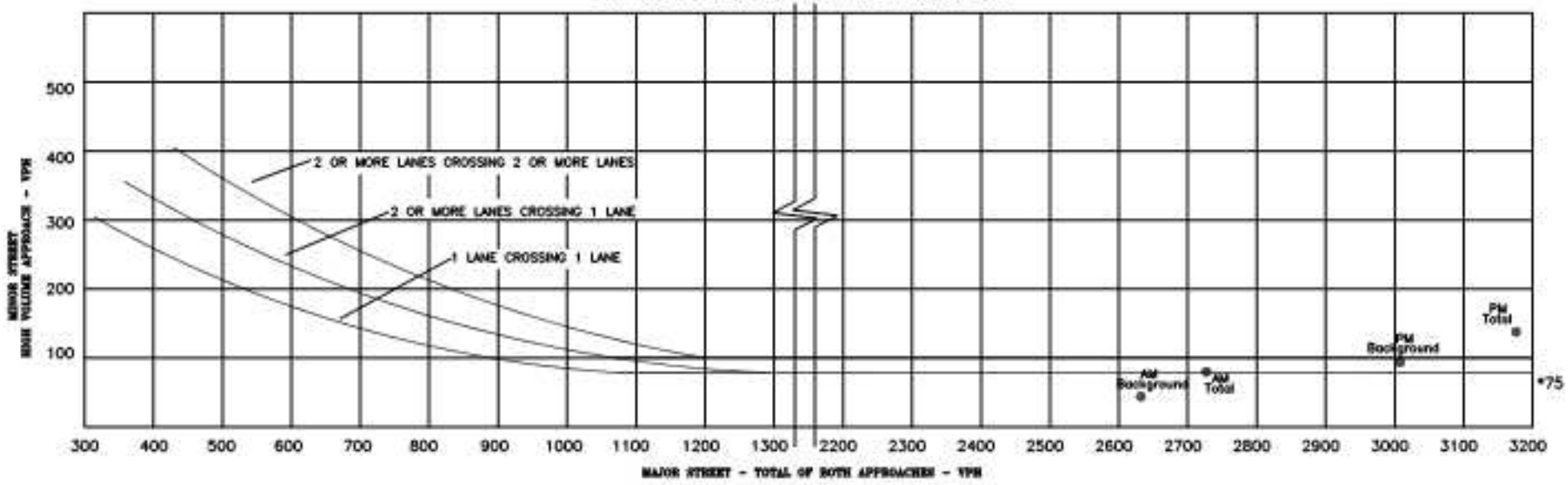


*Note: 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.

C-3

Year 2030 Peak-Hour Traffic
State Highway 42/ Hecla Drive
MUTCD Traffic Signal Warrant 3, Peak-Hour (70% Factor)

(Community Less than 10,000 population or above 40 mph on Major Street)



*Note: 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.

APPENDIX D

Queuing Analysis

Intersection: 1: Baseline Rd & SH 42

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	L	T	R
Maximum Queue (ft)	191	97	92	112	238	731	729	188	114	234	616	182
Average Queue (ft)	97	47	33	47	226	695	550	109	69	82	303	29
95th Queue (ft)	179	85	73	96	235	815	888	208	111	155	537	115
Link Distance (ft)		888	888			711	711				2388	
Upstream Blk Time (%)						42	4					
Queuing Penalty (veh)						0	0					
Storage Bay Dist (ft)	200			150	200			150	200	200		150
Storage Blk Time (%)	1			0	83	2	26	2			18	0
Queuing Penalty (veh)	1			0	208	5	48	4			42	0

Intersection: 1: Baseline Rd & SH 42

Movement	SB	SB	SB	SB
Directions Served	L	L	T	R
Maximum Queue (ft)	57	235	450	175
Average Queue (ft)	18	56	403	43
95th Queue (ft)	45	158	521	129
Link Distance (ft)			423	
Upstream Blk Time (%)			14	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)	200	200		150
Storage Blk Time (%)			31	0
Queuing Penalty (veh)			58	0

Intersection: 34: Paschal Drive & SH 42

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	125	168	142	76	136	319	34	29	881	144
Average Queue (ft)	58	59	61	31	61	103	4	5	328	18
95th Queue (ft)	117	125	116	62	112	228	21	22	703	97
Link Distance (ft)		177		899		274			2388	
Upstream Blk Time (%)		0				0				
Queuing Penalty (veh)		1				3				
Storage Bay Dist (ft)	100		300		300		300	300		300
Storage Blk Time (%)	5	2				0			6	0
Queuing Penalty (veh)	4	2				0			4	0

Intersection: 1: Baseline Rd & SH 42

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	L	T	R
Maximum Queue (ft)	232	801	809	185	232	489	288	116	106	235	1022	176
Average Queue (ft)	210	461	450	121	189	183	62	39	55	83	503	59
95th Queue (ft)	267	789	791	226	260	436	192	86	100	181	876	166
Link Distance (ft)		888	888			711	711				2356	
Upstream Blk Time (%)		1	0									
Queuing Penalty (veh)		2	1									
Storage Bay Dist (ft)	200			150	200			150	200	200		150
Storage Blk Time (%)	61	17	46	3	25		0	0			27	0
Queuing Penalty (veh)	136	25	98	7	23		0	0			85	0

Intersection: 1: Baseline Rd & SH 42

Movement	SB	SB	SB	SB
Directions Served	L	L	T	R
Maximum Queue (ft)	232	249	457	131
Average Queue (ft)	207	223	427	15
95th Queue (ft)	257	275	513	81
Link Distance (ft)			423	
Upstream Blk Time (%)			46	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)	200	200		150
Storage Blk Time (%)	45	72	11	0
Queuing Penalty (veh)	383	619	35	0

Intersection: 34: Paschal Drive & SH 42

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	124	176	70	88	182	354	268	147	457	228
Average Queue (ft)	75	60	22	22	54	182	25	21	170	18
95th Queue (ft)	125	136	56	59	111	342	115	82	373	96
Link Distance (ft)		133		946		282			2356	
Upstream Blk Time (%)	4	3			0	2	0			
Queuing Penalty (veh)	0	8			0	26	0			
Storage Bay Dist (ft)	100		300		300		300	300		300
Storage Blk Time (%)	7	2			0	2	0		1	0
Queuing Penalty (veh)	9	2			0	4	0		2	0

Intersection: 1: Baseline Rd & SH 42

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	118	125	167	164	151	233	245	726	726	182	195	235
Average Queue (ft)	63	76	88	76	67	181	217	658	632	136	121	155
95th Queue (ft)	105	121	141	133	125	256	272	839	844	223	181	257
Link Distance (ft)			888	888				711	711			
Upstream Blk Time (%)								11	6			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	200	200			150	200	200			150	200	200
Storage Blk Time (%)				0	1	20	30	50	60	2	1	2
Queuing Penalty (veh)				0	1	87	130	272	195	10	6	16

Intersection: 1: Baseline Rd & SH 42

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	L	L	T	R
Maximum Queue (ft)	2042	1648	70	240	434	180
Average Queue (ft)	1484	780	22	49	430	72
95th Queue (ft)	2098	1644	54	124	436	184
Link Distance (ft)	2351	2351			417	
Upstream Blk Time (%)					36	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)			200	200		150
Storage Blk Time (%)	35				40	0
Queuing Penalty (veh)	98				126	0

Intersection: 34: Paschal Drive & SH 42

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	96	65	148	118	81	171	134	34	27	169	195	21
Average Queue (ft)	45	26	62	29	30	68	32	3	3	64	68	4
95th Queue (ft)	88	56	118	71	65	141	82	19	15	139	147	17
Link Distance (ft)		121		934		283	283			2351	2351	
Upstream Blk Time (%)	0											
Queuing Penalty (veh)	0											
Storage Bay Dist (ft)	100		300		300			300	300			300
Storage Blk Time (%)	1	0										
Queuing Penalty (veh)	0	0										

Intersection: 41: Hecla Drive & SH 42

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	80	64	74	27	76	141	123	25	39	111	135	19
Average Queue (ft)	29	28	23	12	36	31	27	3	7	30	44	2
95th Queue (ft)	61	54	59	28	71	91	82	14	24	81	111	11
Link Distance (ft)	456		987			833	833			946	946	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		200		200	200			300	300			200
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 42: South Boulder Road & Plaza Drive

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	178	167	157	325	292	38	112	93
Average Queue (ft)	81	86	76	184	156	22	45	30
95th Queue (ft)	171	148	131	271	242	43	87	63
Link Distance (ft)	1240	1240	1240	542	542	542	315	315
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 43: Hecla Way & Plaza Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	54	69	39	30
Average Queue (ft)	32	36	5	2
95th Queue (ft)	48	56	24	13
Link Distance (ft)	263	255	315	892
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 1: Baseline Rd & SH 42

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	118	236	929	926	195	219	230	266	318	134	165	236
Average Queue (ft)	57	131	870	873	138	136	140	104	92	65	102	136
95th Queue (ft)	109	279	1006	986	239	205	221	204	195	120	150	226
Link Distance (ft)			875	875				699	699			
Upstream Blk Time (%)			45	48								
Queuing Penalty (veh)			287	311								
Storage Bay Dist (ft)	200	200			150	200	200			150	200	200
Storage Blk Time (%)			79	77	6	2	2	0	1	0		0
Queuing Penalty (veh)			174	262	23	3	3	1	2	0		0

Intersection: 1: Baseline Rd & SH 42

Movement	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	L	T	T	R
Maximum Queue (ft)	613	584	123	241	249	438	438	145
Average Queue (ft)	314	312	57	219	235	431	359	21
95th Queue (ft)	513	490	107	236	242	439	597	83
Link Distance (ft)	2349	2349	2349			417	417	
Upstream Blk Time (%)						68	5	
Queuing Penalty (veh)						0	0	
Storage Bay Dist (ft)				200	200			150
Storage Blk Time (%)	15			75	89	2	6	0
Queuing Penalty (veh)	38			462	550	7	9	0

Intersection: 34: Paschal Drive & SH 42

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	96	91	70	31	60	214	201	31	40	146	136	27
Average Queue (ft)	50	32	25	14	28	85	84	13	12	48	51	6
95th Queue (ft)	88	65	58	38	58	172	167	35	34	112	108	21
Link Distance (ft)		121		929		283	283			2349	2349	
Upstream Blk Time (%)	0	0										
Queuing Penalty (veh)	0	0										
Storage Bay Dist (ft)	100		300		300			300	300			300
Storage Blk Time (%)	0	0										
Queuing Penalty (veh)	0	0										

Intersection: 41: Hecla Drive & SH 42

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	84	71	78	76	62	232	222	34	47	132	149	18
Average Queue (ft)	44	25	17	24	21	71	69	4	11	41	57	2
95th Queue (ft)	81	50	48	57	48	161	164	18	34	106	126	11
Link Distance (ft)	456		987			833	833			946	946	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		200		200	200			300	300			200
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

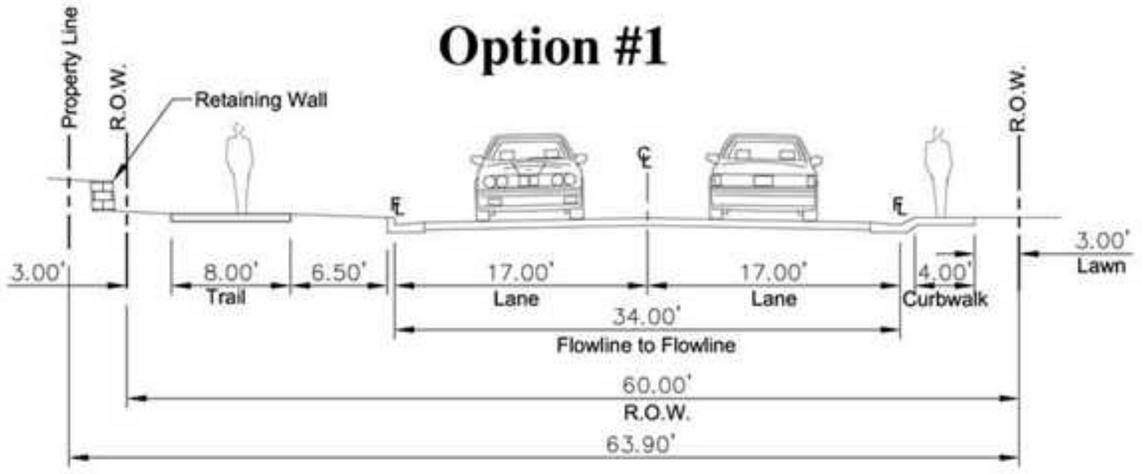
Intersection: 42: South Boulder Road & Plaza Drive

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	338	407	355	230	167	53	308	157
Average Queue (ft)	173	213	192	128	99	25	177	34
95th Queue (ft)	331	344	304	195	156	49	281	94
Link Distance (ft)	1240	1240	1240	542	542	542	315	315
Upstream Blk Time (%)							0	0
Queuing Penalty (veh)							1	0
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

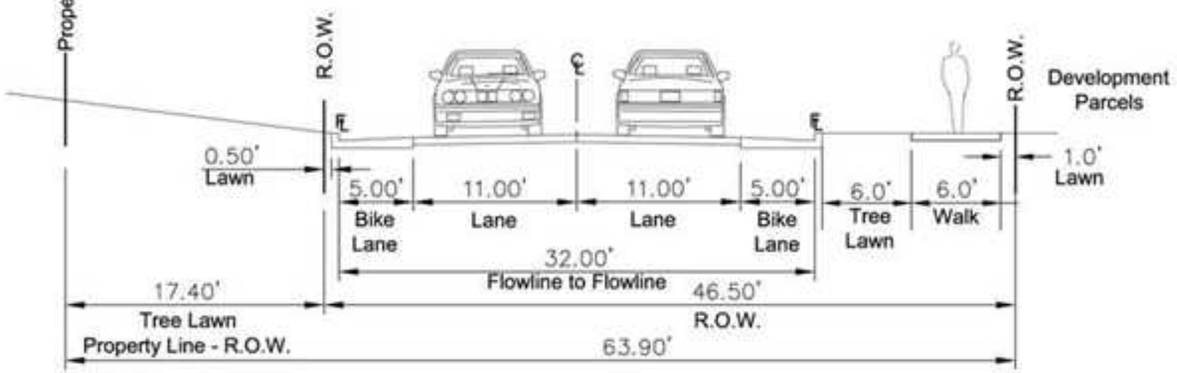
Intersection: 43: Hecla Way & Plaza Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	161	81	29	31
Average Queue (ft)	72	42	3	4
95th Queue (ft)	118	70	18	19
Link Distance (ft)	263	255	315	892
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

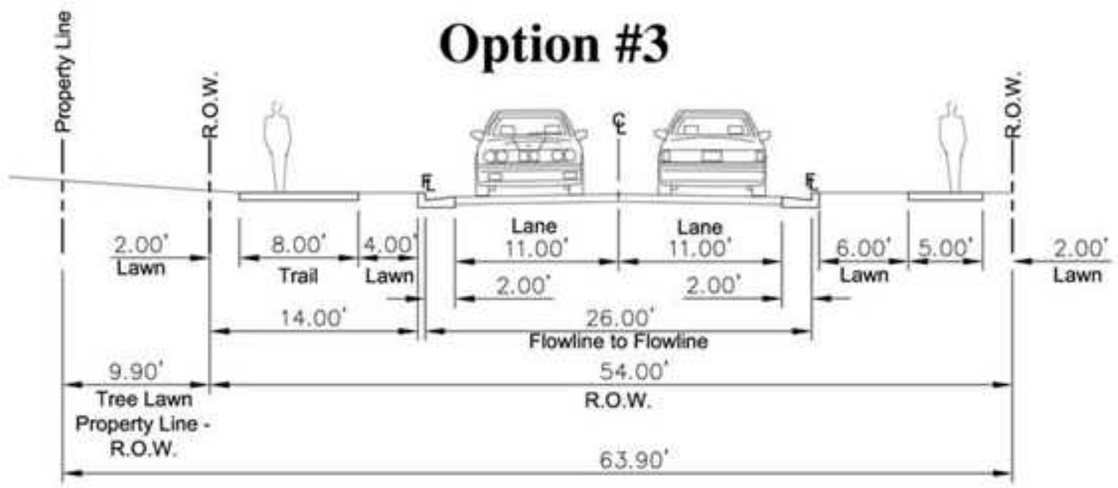
Option #1



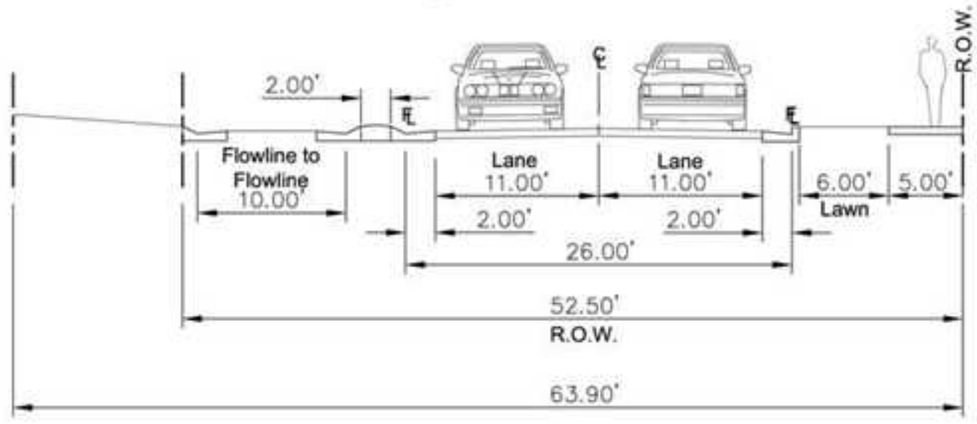
Option #2



Option #3



Option #4



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